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| <b>Customer</b> : ESRIN            | <b>Document Ref</b> : IDEAS+-VEG-OQC-REP-2137 |
| <b>Contract No</b> : 21525/08/I-OL | <b>Issue Date</b> : 30 October 2014           |
| <b>WP No</b> : 14500               | <b>Issue</b> : 1                              |

**Title** : IDEAS – SMOS Public Monthly Report - September 2014

**Abstract** : This document provides a summary of the status and performance of SMOS over the course of the reporting month.

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**Distribution** :  
**Hard Copy File:**  
**Filename:** IDEAS+-VEG-OQC-REP-2137\_v1.doc

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## **AMENDMENT POLICY**

This document shall be amended by releasing a new edition of the document in its entirety. The Amendment Record Sheet below records the history and issue status of this document.

### **AMENDMENT RECORD SHEET**

| <b>ISSUE</b> | <b>DATE</b>        | <b>DCI No</b> | <b>REASON</b> |
|--------------|--------------------|---------------|---------------|
| 1            | 30 October<br>2014 | N/A           | First release |



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## **1. EXECUTIVE SUMMARY**

This is the routine Soil Moisture and Ocean Salinity (**SMOS**) Monthly Public Report containing a summary of the instrument health, product quality status and updates to SMOS processing and AUX files during September 2014.

The instrument health during September was found to be nominal. There were eight unavailability's reported during the reporting period that translate into time intervals with data loss or degraded data. The list of unavailability's is included in the section 3.2.

The data quality during September was found to be nominal except in the time intervals listed in the section 4.5. The degradation of the data has been induced either by instrument anomalies or by the unavailability of the dynamic auxiliary files.



## 2. INTRODUCTION

### 2.1 Structure of the Document

After this introduction, the document is divided into a number of major sections that are briefly described below:

1        Executive summary

The executive summary covers the main findings from the report.

2        Introduction

A list of referenced documents and definitions of terms are available.

3        Instrument status

This section covers the instrument health and unavailabilities from this reporting period.

4        Data Summary

This section covers reprocessing, updates to processors and aux files as well as a data coverage summary.

5        Long Term Analysis

Long-term analysis of the instrument calibration and data quality are provided in this section.

### 2.2 Definitions of Terms

The following terms have been used in this report with the meanings shown.

| Term  | Definition   |
|-------|--|
| CMN   | Control and Monitoring Node, responsible for commanding the receivers, reading their physical temperatures and telemetry and the generation of the synchronization signal (local oscillator tone) among receivers.         |
| CCU   | Correlator and Control unit, instrument computer on-board  |
| DPGS  | Data Processing Ground Segment   |
| ESL   | Expert Science Laboratory  |
| IC4EC | Internal Calibration for External calibration. Calibration sequences for the instrument monitoring and calibration of science data acquired in external target pointing.   |
| IDEAS | Instrument Data quality Evaluation and Analysis Service, reporting to the ESA Data Quality and Algorithms Management Office (EOP-GQ), responsible for quality of data provided to users including the data calibration and |



validation, the data processing algorithms, and the routine instrument and processing chain performances.

|      |                               |
|------|-------------------------------|
| IPF  | Instrument Processor Facility |
| L2SM | Level 2 Soil Moisture         |
| MM   | Mass Memory                   |
| OCM  | Orbit Correction Manoeuvre    |
| PMS  | Power Measurement System      |
| RFI  | Radio Frequency Interference  |
| N/A  | Not applicable                |





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### 3. INSTRUMENT STATUS

#### 3.1 Instrument health

The current instrument status is that all the **instrument** subsystems are working correctly. The current configuration of the instrument is that the arm A and the arm B are working in nominal side and arm C is in the redundant side.

**Table 3-1 History of instrument problems and mode changes**

| Start                                | Stop | Description   |
|--------------------------------------|------|---|
| 11 January 2010 12:07z<br>Orbit 1013 | N/A  | Arm A changes from redundant to nominal side. That operation is to avoid the malfunction of one of the redundant CMNs of the arm. |
| 12 January 2011 09:15z<br>Orbit 6278 | N/A  | Arm B changes from redundant to nominal side. That operation is to avoid the malfunction of one of the redundant CMNs of the arm. |

#### 3.2 Instrument unavailabilities and anomalies

The unavailabilities and anomalies listed in Table 3-2 occurred during the reporting period. A full list of unavailabilities can be found in the Mission Status section on the SMOS Earthnet website (<http://earth.esa.int/object/index.cfm?fobjectid=7060>).

During these unavailabilities and anomalies the instrument may have either not collected data or may have collected corrupt data which may not have been processed to higher levels. Table 4-5, Table 4-6 and Table 4-7 provide details of the data which has been affected by gaps and quality degradation respectively.

**Table 3-2 SMOS unavailability list**

| Start             |       | Stop              |       | Unavailability Report Reference | Planned | Description              |
|-------------------|-------|-------------------|-------|---------------------------------|---------|--------------------------|
| Time              | Orbit | Time              | Orbit |                                 |         |                          |
| 12/09/2014 20:23z | -     | 12/09/2014 23:07z | -     | -                               | No      | Fibre breach at Svalvard |



|                      |       |                      |       |          |     |                            |
|----------------------|-------|----------------------|-------|----------|-----|----------------------------|
| 17/09/2014<br>21:03z | 25624 | 17/09/2014<br>21:03z | 25624 | FOS-0276 | No  | MM Latch up<br>P3          |
| 18/09/2014<br>23:30z | 25640 | 18/09/2014<br>23:30z | 25640 | FOS-0277 | Yes | MM Latch up<br>P3 Recovery |
| 22/09/2014<br>20:33z | 25695 | 22/09/2014<br>21:08z | 25696 | FOS-0278 | No  | MM Latch up<br>P6          |
| 23/09/2014<br>19:00z | 25709 | 23/09/2014<br>19:00z | 25709 | FOS-0279 | Yes | MM Latch up<br>P6 Recovery |
| 24/09/2014<br>08:48z | 25717 | 24/09/2014<br>08:48z | 25717 | FOS-0280 | No  | MM Latch up<br>P5          |
| 24/09/2014<br>13:18z | 25720 | 24/09/2014<br>13:18z | 25720 | FOS-0282 | Yes | Gyro<br>Calibration        |
| 25/09/2014<br>15:30z | 25736 | 25/09/2014<br>15:30z | 25736 | FOS-0281 | Yes | MM Latch up<br>P5 Recovery |



## 4. DATA SUMMARY

### 4.1 Reprocessing activities

The information regarding to data reprocessing activities (REPR data type) during the reporting period are:

- 1) The second SMOS mission reprocessing started on 2014-07-10, and finished on 2014-09-04. Preparation has started for the L2 data reprocessing. The distribution of the complete reprocessed data set is planned for the first quarter of 2015

The information regarding to the data regeneration activities (OPER data type) during the reporting period are:

- 1) None

The information regarding to past data reprocessing activities (REPR data type) are:

- 1) The first SMOS mission reprocessing campaign has been completed and the data set is available to the SMOS user community.

Particularly, the processors used are the Level 1 Processor v505, the Level 2 Ocean Salinity processor v550 and the Level 2 Soil Moisture processor v501. The reprocessed period covers from 2010-01-12 to 2011-12-22 for the L1 and L2 sea surface salinity data and from 2010-01-12 to 2011-11-28 for the L2 soil moisture data.

The improvements and known caveats in the quality of the SMOS Level 1 and Level 2 data products are described in the data release notes available on the ESA web page:

- a) L1 read-me-first note available on:

[https://earth.esa.int/c/document\\_library/get\\_file?folderId=127856&name=DLFE-5105.pdf](https://earth.esa.int/c/document_library/get_file?folderId=127856&name=DLFE-5105.pdf)

- b) L2 soil moisture read-me-first note available on:

[https://earth.esa.int/documents/10174/118493/L2SMv551\\_release\\_note\\_2013-08-09.pdf](https://earth.esa.int/documents/10174/118493/L2SMv551_release_note_2013-08-09.pdf)

- c) L2 sea surface salinity read-me-first note available on:

[https://earth.esa.int/c/document\\_library/get\\_file?folderId=118493&name=DLFE-6605.pdf](https://earth.esa.int/c/document_library/get_file?folderId=118493&name=DLFE-6605.pdf)

Data users are strongly encouraged to consult those notes before using SMOS data.

- 2) The first SMOS L2 sea surface salinity "catch-up" reprocessing campaign has been completed and the data set covering the period from 22 December 2011 to 31 December 2012 has been released to the SMOS user community. The SMOS L2 sea surface salinity "catch-up" data set has been generated by the L2OS processor version V5.50 using as input the level 1C data from the nominal operational chain (i.e. L1C V505 OPER data type) and an improved Ocean Target Transformation (OTT) correction for the sea surface salinity retrieval. The catch-up reprocessing aimed at aligning the operationally available data set to the reprocessed data set and will be repeated until the operational processing chain will use the same approach (foreseen for end of 2014). With the release of this data set the SMOS users now



have a consistent dataset of sea surface salinity measurements from the beginning of the SMOS mission till December 2012 (REPR data type). Data users are strongly encouraged to consult the Level 2OS read-me-first note ([https://earth.esa.int/c/document\\_library/get\\_file?folderId=118493&name=DLFE-6605.pdf](https://earth.esa.int/c/document_library/get_file?folderId=118493&name=DLFE-6605.pdf)) to understand the improvements and known caveats in the data set before using the SMOS data.

- 3) The first SMOS level 2 soil moisture "catch-up" reprocessing campaign has been completed and the dataset covering the period from 12 January 2010 to 27 April 2012 has been released to the SMOS user community. The SMOS level 2 soil moisture "catch-up" dataset has been generated by the current version V5.51 of the level 2 soil moisture processor using as input the level 1C data from the level 1 reprocessing campaign (i.e. L1C V5.05 REPR data type) with sensing time till 22 December 2011 and the level 1 from the nominal operational chain (i.e. L1C V5.05 OPER data type) thereafter. The "catch-up" soil moisture reprocessing intends to align the entire soil moisture data archive to the currently used level 2 soil moisture processor baseline V5.51.

With the "catch-up" campaign now completed, the users have a consistent and homogenous long term soil moisture level 2 soil moisture V5.51 dataset that can be exploited for their research activities from the beginning of the SMOS mission up to the present. Data users are strongly encouraged to consult the Level 2SM read-me-first note ([https://earth.esa.int/documents/10174/118493/L2SMv551\\_release\\_note\\_2013-08-09.pdf](https://earth.esa.int/documents/10174/118493/L2SMv551_release_note_2013-08-09.pdf)) to understand the known caveats in the dataset before using the SMOS data.

- 4) The Second SMOS L2 sea surface salinity "catch-up" reprocessing campaign has been completed and the data set covering the period from 01 January 2013 to 31 December 2013 has been released to the SMOS user community.

The SMOS L2 sea surface salinity "catch-up" data set has been generated by the L2OS processor version V5.50 using as input the level 1C data from the nominal operational chain (i.e. L1C V505 OPER data type) and an improved Ocean Target Transformation (OTT) correction for the sea surface salinity retrieval. The catch-up reprocessing aimed at aligning the operationally available data set to the reprocessed data set and will be repeated until the operational processing chain will use the same approach (foreseen for end of 2014). With the release of this data set the SMOS users now have a consistent dataset of sea surface salinity measurements from the beginning of the SMOS mission till December 2013 (REPR data type). Data users are strongly encouraged to consult the Level 2OS read-me-first note ([https://earth.esa.int/documents/10174/127856/SMOS\\_Level-2\\_Ocean\\_Salinity\\_RN](https://earth.esa.int/documents/10174/127856/SMOS_Level-2_Ocean_Salinity_RN)) to understand the improvements and known caveats in the data set before using the SMOS data.

The information regarding to the past data regeneration activities (OPER data type) are:

- 1) The Level 2 Ocean Salinity data covering the period 15-Dec-2011 00:25:04z to 24-Jan-2012 00:21:40z have been regenerated. The period covers from the L2 Ocean Salinity processor deployment until the introduction of the L2 configuration update. The L2 Ocean Salinity data have been regenerated using the L2 configuration introduced on 23-Jan-2012 (see section 4.2.5 in the January 2012 monthly report for the details of the L2 OS configuration used for the re-generation) and the Ocean Target Transformation (OTT) files for December and January. Those files were not available in the nominal processing due to an intrinsic delay in the OTT generation and their usage in this regeneration activity improved the L2 OS data quality with respect to the nominal processing. The files are OPER class and they can be identified through the file counter which is 2 or higher.



- 2) The Level 1 and Level 2 data covering the period of 28th September to 1st October 2012 has been regenerated applying the correct phase calibration. The data regeneration does not cover the regeneration of the AUX\_DGGxxx files. Therefore, the Level 2 Soil Moisture products have been regenerated using the degraded AUX\_DGGxxx files. The files are OPER class and they can be identified through the file counter which is 2 or higher.
- 3) The Level 1 and Level 2 data covering the period from 2012-11-24 13:16z to 2012-11-25 00:10z has been regenerated applying the correct phase calibration. The data regeneration does not cover the regeneration of the AUX\_DGGxxx files. Therefore, the Level 2 Soil Moisture products have been regenerated using the degraded AUX\_DGGxxx files. The files are OPER class and they can be identified through the file counter which is 2 or higher.



## 4.2 Processing changes

### 4.2.1 Processor updates

No processor updates have been conducted during the reporting period.

### 4.2.2 Processor Status

At the end of the reporting period, the Processing Facility is using the following processors:

**Table 4-1 Instrument Processors status**

| Processor | Version                    |
|-----------|----------------------------|
| L1OP      | 504 (L1a/L1b)<br>505 (L1c) |
| L2OS      | 550                        |
| L2SM      | 551                        |

**Table 4-2 Pre- and Post-processors status**

| Processor          | Version |
|--------------------|---------|
| ECMWFP             | 318     |
| VTECGN             | 311     |
| LAI pre-processor  | 307     |
| L2 Post-processors | 400     |

### 4.2.3 Schema updates

No schema changes have been conducted during the reporting period.

### 4.2.4 Schema status

At the end of the reporting period, the schema version of the datablock of the products generated and distributed through EOLI is:



**Table 4-3 Schema version status**

| Product type | Version |
|--------------|---------|
| MIR_SC_F1B   | 300     |
| MIR_SCSF1C   | 300     |
| MIR_SCLF1C   | 300     |
| MIR_BWSF1C   | 300     |
| MIR_BWLF1C   | 300     |
| MIR_SMUDP2   | 300     |
| MIR_OSUDP2   | 300     |
| AUX_ECMWF_   | 300     |

The schema packages are available from the SMOS Global Mapping Tool (GMT) webpage:

[https://earth.esa.int/web/guest/software-tools/-/asset\\_publisher/P2xs/content/gmt-smos-global-mapping-tool](https://earth.esa.int/web/guest/software-tools/-/asset_publisher/P2xs/content/gmt-smos-global-mapping-tool)

#### 4.2.5 Aux file updates

The following quasi-static AUX files were disseminated to the processing stations this reporting period. The status of the quasi-static AUX files at the end of the reporting period is in the section 6.

##### **SM\_OPER\_AUX\_BULL\_B\_20140702T000000\_20140501T235959\_120\_001\_3**

Start sensing time at L1 processor: N/A

Justification: Bulletin Update including values from July 2014 and the prediction for August 2014. Its usage is intended for reprocessing.

##### **SM\_OPER\_AUX\_BULL\_B\_20140702T000000\_20500101T000000\_120\_001\_3**

Start sensing time at L1 processor: 2014-09-01 11:40:27z

Justification: Bulletin Update including values from July 2014 and the prediction for August 2014. Its usage is intended for the nominal production.

##### **SM\_OPER\_AUX\_OTT1D\_20140901T000000\_20500101T000000\_550\_001\_3**

Start sensing time at L2 processor: N/A

Justification: September update.





**SM\_OPER\_AUX\_OTT1F\_\_20140901T000000\_20500101T000000\_550\_001\_3**

Start sensing time at L2 processor: 2014-09-10 T 02:29:50z

Justification: September update.

**SM\_OPER\_AUX\_OTT2D\_\_20140901T000000\_20500101T000000\_550\_001\_3**

Start sensing time at L2 processor: N/A

Justification: September update.

**SM\_OPER\_AUX\_OTT2F\_\_20140901T000000\_20500101T000000\_550\_001\_3**

Start sensing time at L2 processor: 2014-09-10 T 02:29:50z

Justification: September update.

**SM\_OPER\_AUX\_OTT3D\_\_20140901T000000\_20500101T000000\_550\_001\_3**

Start sensing time at L2 processor: N/A

Justification: September update.

**SM\_OPER\_AUX\_OTT3F\_\_20140901T000000\_20500101T000000\_550\_001\_3**

Start sensing time at L1 processor: 2014-09-10 T 02:29:50z

Justification: September update.

### 4.3 Calibration Events Summary

The following table summarizes the major calibration activities conducted during the reporting period. The Local Oscillator calibration is not included in the table since occurs periodically every 10 minutes. The short calibrations are acquired since 2011-03-24 and they are currently used in the nominal processing chain.

**Table 4-4 Calibration summary**

| Date     | Start Time   | Stop Time    | Calibration | Comments  |
|----------|--------------|--------------|-------------|---|
| 03/09/14 | 04:07:39.400 | 05:29:52.600 | NIR         | Nominal<br><br>Brightness temperature:4.1406 K<br><br>RMS: 1.021115 K<br><br>Moon Elevation: 31.405253 deg<br><br>Sun Elevation: -0.656587 deg<br><br>Right Ascension: 259.067139 deg |



|          |              |              |          |  |
|----------|--------------|--------------|----------|--|
|          |              |              |          | Declination: 39.110046 deg   |
| 04/09/14 | 16:26:00.000 | 16:27:44.400 | Short    | Nominal  |
| 11/09/14 | 16:54:00.000 | 16:55:44.400 | Short    | Nominal  |
| 15/09/14 | 15:24:53.400 | 16:47:06.600 | NIR-WARM | <p>Experimental WARM NIR Calibration with the Sun above the antenna plane.</p> <p>Brightness temperature: 3.995529 K</p> <p>RMS: 0.828635 K</p> <p>Moon Elevation: 8.062512 deg</p> <p>Sun Elevation: 5.470163 deg</p> <p>Right Ascension: 99.665413 deg</p> <p>Declination: -60.390408 deg</p>    |
| 17/09/14 | 05:01:53.400 | 06:24:06.600 | NIR      | <p>Nominal</p> <p>Brightness temperature: 4.270147 K</p> <p>RMS: 1.254146 K</p> <p>Moon Elevation: -31.042015 deg</p> <p>Sun Elevation: -5.168205 deg</p> <p>Right Ascension: 273.554352 deg</p> <p>Declination: 41.587841 deg</p>   |
| 18/09/14 | 15:41:00.000 | 15:42:44.400 | Short    | Nominal  |
| 25/09/14 | 16:08:00.000 | 16:09:44.400 | Short    | Nominal  |
| 29/09/14 | 14:43:06.400 | 16:05:19.600 | NIR-WARM | <p>Experimental WARM NIR Calibration with the Sun above the antenna plane.</p> <p>Brightness temperature: 3.987190 K</p> <p>RMS: 0.812546 K</p> <p>Moon Elevation: -15.148207 deg</p> <p>Sun Elevation: 9.968127 deg</p> <p>Right Ascension: 108.099693 deg</p> <p>Declination: -49.192546 deg</p> |



## 4.4 Data Coverage Summary

Where instrument unavailabilities or anomalies have occurred during this reporting period, gaps in data coverage may have occurred. A list of the gaps due to a permanent data loss is given in Table 4-5 by product level. On the other hand, a list of gaps due to operational problems is given in Table 4-6. The latter gaps may be recovered when the problem is fixed.

The science data gaps due to the execution of calibration activities are not listed in this section.

**Table 4-5 Data loss summary**

| Start                                   | Finish                                  | Data Level   | Comments                                 |
|---|---|--------------|--|
| 12/09/2014<br>20:23z                    | 12/09/2014<br>23:07z                    | All Levels   | Fibre breach at Svalbard <sup>1</sup>    |
| 22/09/2014<br>20:33z<br><br>Orbit 25695 | 22/09/2014<br>21:08z<br><br>Orbit 25696 | All Levels   | MM Latch up P6 (FOS-0278)                |
| 24/09/2014<br>13:18z<br><br>Orbit 25720 | 24/09/2014<br>13:18z<br><br>Orbit 25720 | All Products | Gyro Calibration (FOS-0282) <sup>2</sup> |

1: On Friday September 12th around 22:00 UTC there was a fibre breach in the Svalbard GS affecting the SMOS x-band antenna (SG-41) and impacting the SMOS acquisitions.

2: Data acquired during the manoeuvre is flagged as external pointing and not available as nominal data

**Table 4-6 Operational gaps summary**

| Start | Finish | Data Level | Comments |
|-------|--------|------------|----------|
| N/A   | N/A    | N/A        | N/A      |

## 4.5 Summary of degraded data

In September 2014, SMOS data was affected by the following instrument and processing anomalies which have had a detrimental effect on the data quality.

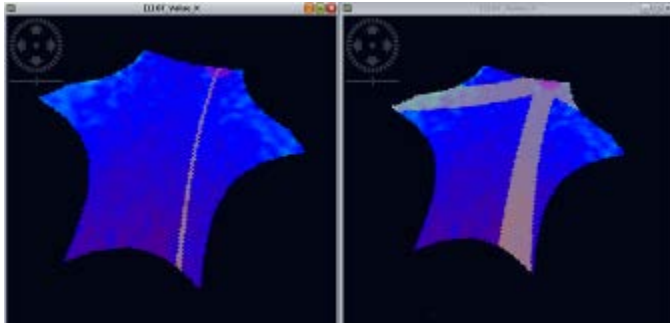
**Table 4-7 Summary of degraded data**

| Start | Finish | Affected products | Problem Description |
|-------|--------|-------------------|---------------------|
| N/A   | N/A    | N/A               | N/A                 |

## 4.6 Product Quality Disclaimers

The following product disclaimers affects the data generated in the reporting period:

**Table 4-8 Summary of product quality disclaimers**

| Date           |   |
|----------------|---|
| 21 March 2012  | Due to a software anomaly in the L1OP V5.04 and V5.05 processor, the Sun Glint Flag available in the L1c Product is not correctly set. This flag aims to indicate measurements affected by Sun glint over ocean. The major impact of this anomaly is on the users who are using L1c data to retrieve Sea Surface Salinity. Those users need to discard the information provided by the Sun glint flag in their retrieval algorithms. This anomaly does not impact the ESA Level 2 Ocean salinity product because the Sun glint flag from L1c input data is not used by the retrieval algorithm. Information on Sun glint are directly computed by the L2 processor and used for the retrieval of the Sea Surface Salinity. Only the Dg_sun_glint_area counter in the Level 2 Ocean Salinity products is affected due to this anomaly.   |
| 12 July 2012   | Due to a software anomaly in the Level 0 processor, the <i>Cycle</i> field in all the product headers is incorrectly set. This value is annotated in the headers of all the higher level products.  |
| 15 August 2012 | <p>Due to a software anomaly in the Level 1 processor, the sun tails flag is not correctly set in the L1C products. Therefore, not all the affected data by the Sun tails are flagged in the Level 1C products and the Level 2 processors will take those data as nominal. The following figure shows where the not flagged pixels are located in the snapshot in case of descending passes. The current flagging is provided in the left, whereas the correct flagging of the Sun tail is shown in the right. Notice that in the current data one of the Sun tail is missing and therefore the pixel in the upper part of the snapshot are not flagged. The figure on the right has been generated with an increase of the width of the Sun tail to make clear the area affected. The impact of the Sun tail in the measurements is under investigation by the ESL and a refinement of the width of the Sun Tail will be available in the next version of the L1 processor.</p>  |
| 06 March 2013  | Due to a software anomaly in the Level 2 Ocean Salinity processor V550, Fg_ctrl_galactic_noise (part of Fg_ctrl_poor_geophysical) may be set sometimes when it should   |



|               |  |
|---------------|--|
|               | <p>be clear. As a result, good quality data may be rejected when filtering retrievals using the Fg_ctrl_poor_geophysical flag. Users are recommended to filter data using either a threshold (eg &lt; 150) on Dg_quality_SSS, or a combination of Fg_ctrl_poor_retrieval and applicable flags from Fg_ctrl_poor_geophysical (ie any of Fg_ctrl_many_outliers or Fg_ctrl_sunglint or Fg_ctrl_moonglint or Fg_ctrl_num_meas_low or Fg_sc_suspect_ice or Fg_sc_rain). In the OSDAP the Fm_gal_noise_error flag may also be set incorrectly.</p> |
| 06 March 2013 | <p>Due to a software anomaly in the Level 2 Ocean Salinity processor v550, the salinity retrieval error is slightly increased in high wind speed conditions.</p>   |



## 5. LONG-TERM ANALYSIS

### 5.1 Calibration Analysis

The calibration parameters are under monitoring. During the reporting period, there have been NIR calibrations events on 03<sup>th</sup>, and 17<sup>th</sup> of September. The NIR calibration events have been monitored and the noise injection levels of the NIR diodes are inside the range defined in the routine calibration plan.

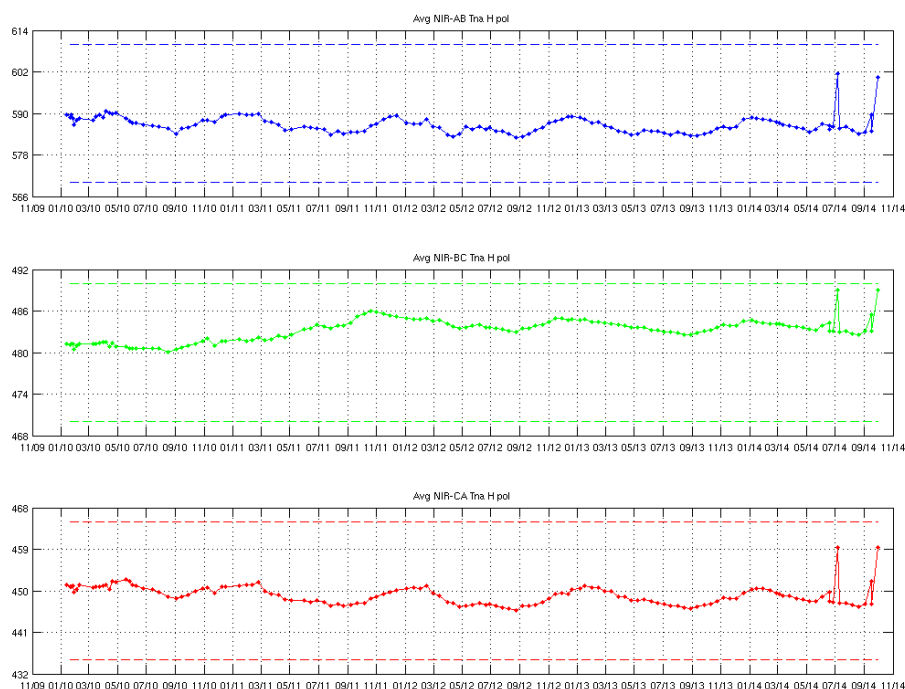
The evolution of the noise temperature of the reference noise diodes  $T_{na}$  and  $T_{nr}$  show some drifting and seasonal variations since the beginning of the mission (Figure 1 to Figure 4). After the compensation of those variations by means of the calibration, residual seasonal variations are still observed in the data (see Release notes: [https://earth.esa.int/c/document\\_library/get\\_file?folderId=127856&name=DLFE-5105.pdf](https://earth.esa.int/c/document_library/get_file?folderId=127856&name=DLFE-5105.pdf)). Recently, it has been discovered that the antenna losses are the elements which are varying and those variations are propagated to the reference noise temperatures  $T_{na}$  and  $T_{nr}$  through the calibration. Therefore, the variation in  $T_{na}$  and  $T_{nr}$  is not totally related to the diode stability which is the purpose to monitor these parameters.

Currently, the calibration algorithms compensates both variations, the antenna losses and the reference noise diodes, simultaneously since both factors are coupled in the current calibration strategy. The Level 1 Processor 600 will introduce a new calibration algorithm which decouples the variation of the antenna losses and the reference noise diodes drifts. That will allow the compensation of each drift separately improving the diode stability monitoring, further improving the calibration of the NIR and as such the final data quality in terms of Brightness temperature stability and accuracy.

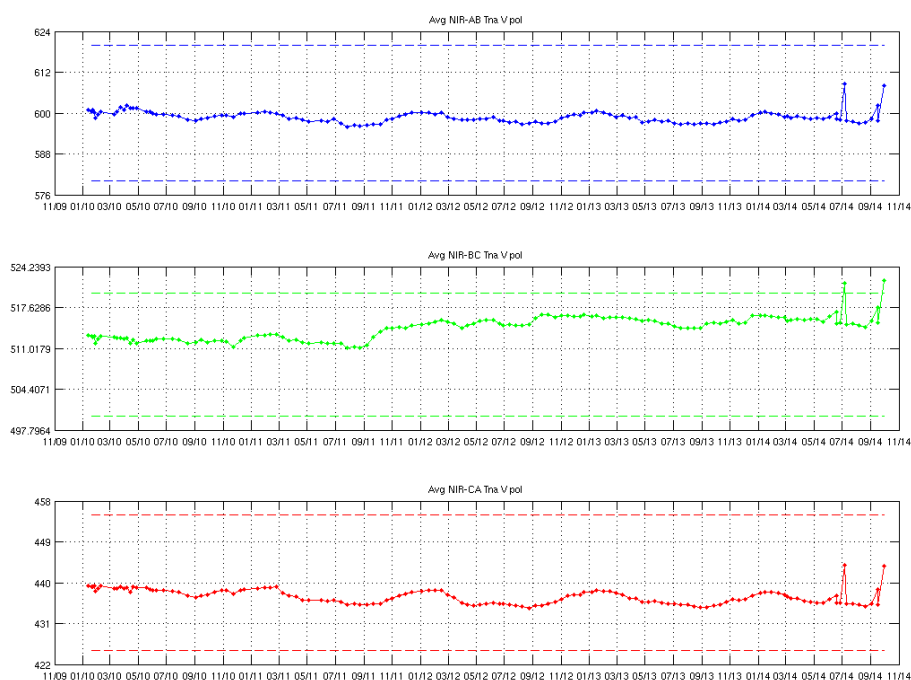
The leakage and cross-coupling factors of the NIR channels remain small and no problems can be observed apart from a peak in the phase of the NIR-AB cross-coupling term on 11 April 2012. That peak corresponds to an anomaly in the NIR-AB that did not have impact on the data.

The Warm NIR calibrations performed on 7<sup>th</sup> of July, 15<sup>th</sup> and 29<sup>th</sup> of September were commanded with the Sun slightly above the antenna plane. These were experimental NIR calibrations and have not been used in the operational chain, but there are included in the analysis for completeness. The result of these calibrations can be easily seen in the plots as an outlier value. Also, after these three experimental calibrations it has been agreed that the execution of NIR calibrations with the Sun above the antenna plane and elevations between 5 and 10 degrees removes the anomalous behaviour of LICEF-BC-03, while maintaining a better thermal stability and reducing the thermal stress of the instrument. Warm NIR calibrations with a Sun elevation of 10 degrees can be executed for the most part of the year, except during the SMOS equinoxes periods.

**Figure 1 Tna evolution of NIR AB (blue), NIR BC (green) and NIR CA (red) in the H-channel since the beginning of the mission. Thresholds in dashed lines**

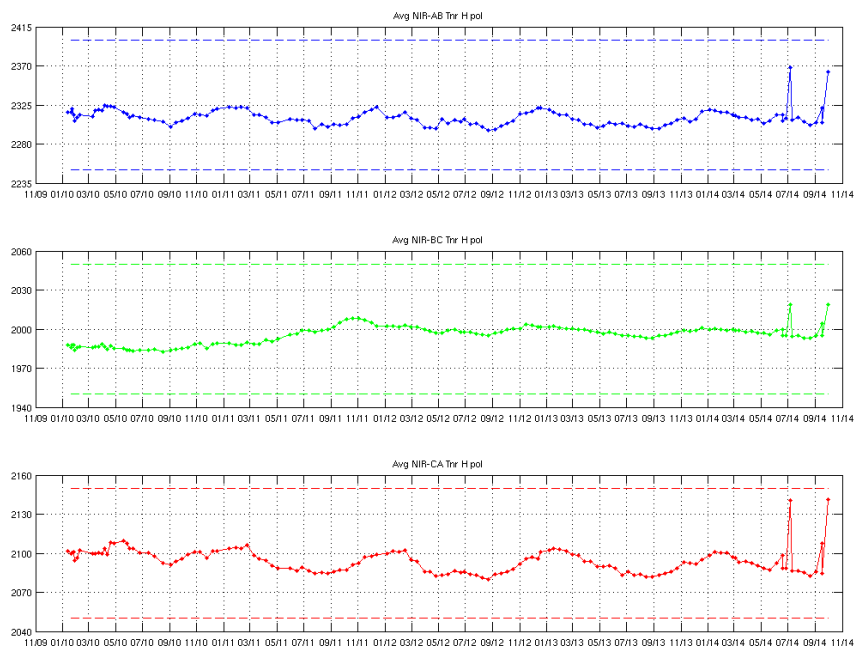


**Figure 2 Tna evolution of NIR AB (blue), NIR BC (green) and NIR CA (red) in the V-channel since the beginning of the mission. Thresholds in dashed lines**

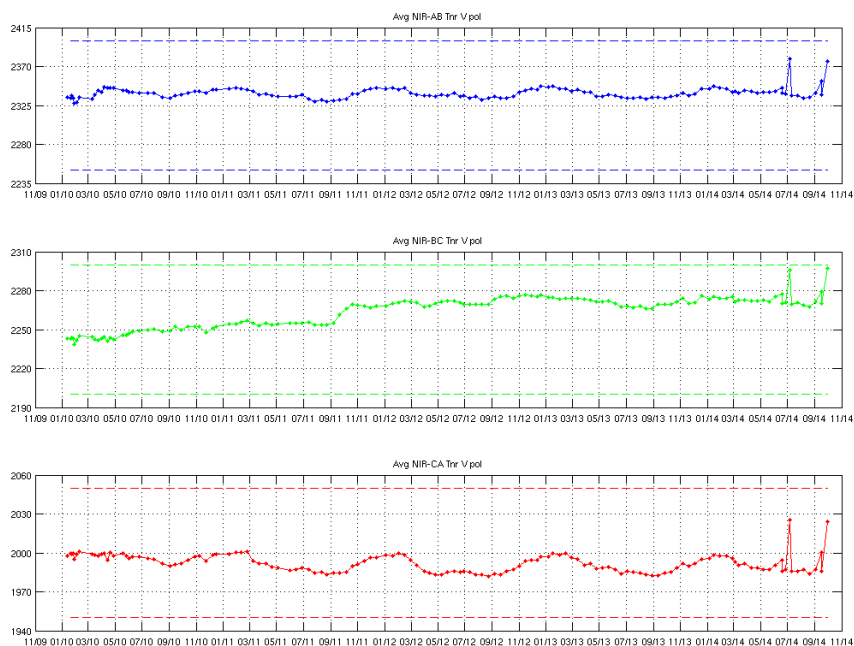




**Figure 3 Tnr evolution of NIR AB (blue), NIR BC (green) and NIR CA (red) in the H-channel since the beginning of the mission. Thresholds in dashed lines**

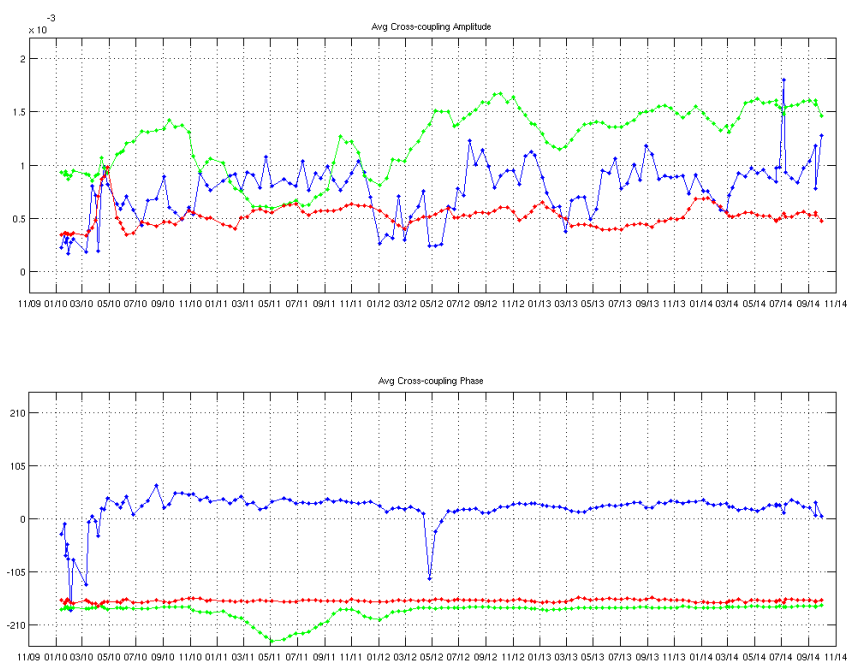


**Figure 4 Tnr evolution of NIR AB (blue), NIR BC (green) and NIR CA (red) in the V-channel since the beginning of the mission. Thresholds in dashed lines**

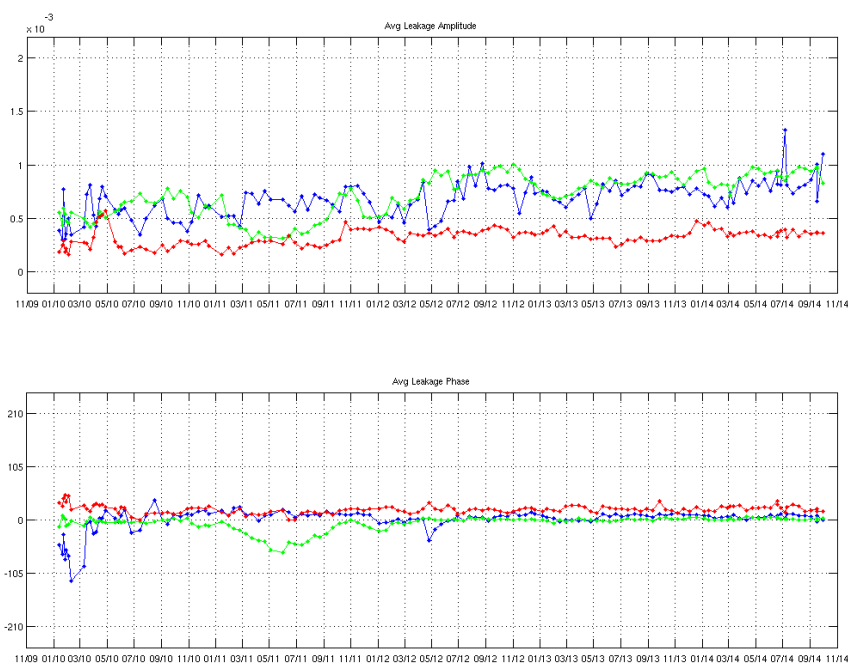




**Figure 5 Cross-coupling evolution in amplitude and phase of NIR AB (blue), NIR BC (green) and NIR CA (red) since the beginning of the mission**



**Figure 6 Leakage factor evolution in amplitude and phase of NIR AB (blue), NIR BC (green) and NIR CA (red) since the beginning of the mission**





The LICEF calibration status is updated by long (every 8 weeks) and short (weekly) on-board calibration activities. No long calibration has been executed during the reporting period.

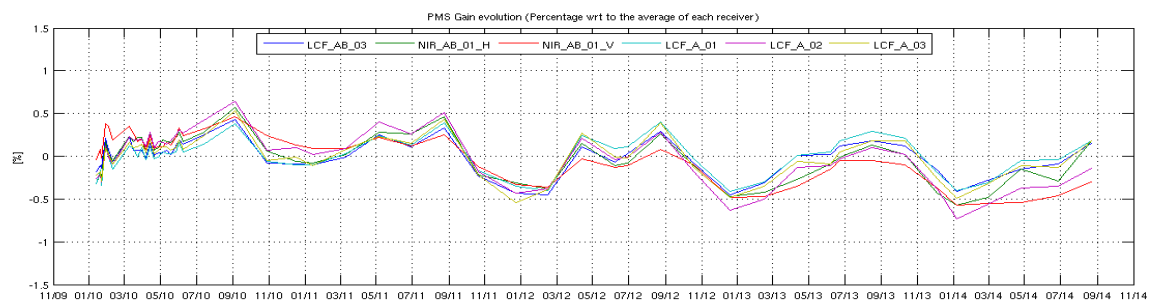
LICEF PMS gain is derived during the long calibration activity and the Figure 7 to Figure 18 show the evolution of the deviations of the PMS gain wrt its average over time.

Figure 19 to Figure 30 show the evolution of the PMS offsets derived during the short calibration activity. The PMS gain and offset values are inside the range defined in the routine calibration plan although small drift can be observed. That drift can be explained due to the current limitations of the NIR calibration algorithm to track the antenna losses and the reference noise diodes. The drifts in the antenna losses that the NIR calibration algorithm cannot compensate are directly propagated to the PMS gain and offset calibration. It is expected that the introduction of the future L1OP v600 will remove these apparent drifts allowing to improve the PMS stability and as such the final data quality in terms of Brightness temperature stability and accuracy.

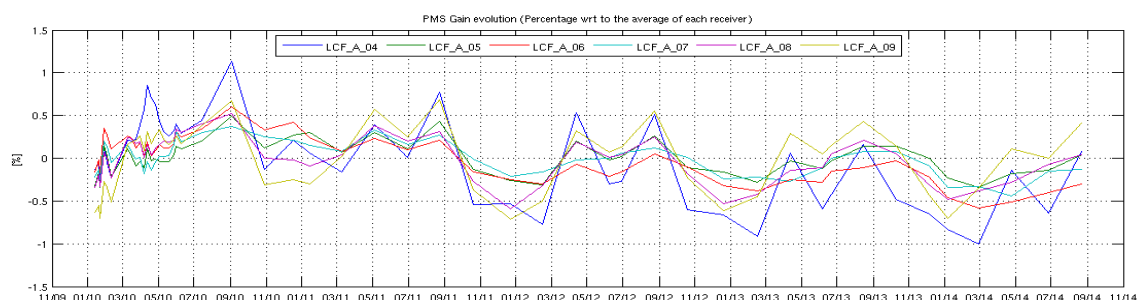
Figure 31 shows the evolution of the average over all the baselines of the Fringe Washing Function (FWF) amplitude in the origin derived during the long calibration. The amplitude of the FWF at the origin does not show any drift and their values are inside the ranges defined in the routine calibration plan.

During the reporting period updates has been applied for the NIR and Short calibration as reported in Table 4-4

**Figure 7 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN H1**

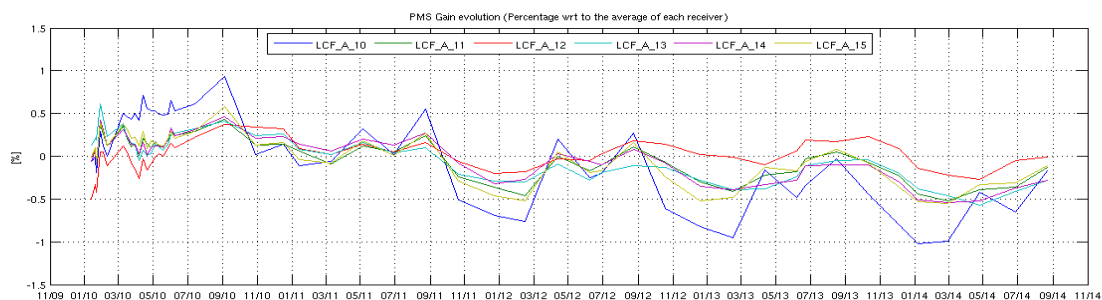


**Figure 8 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN A1**

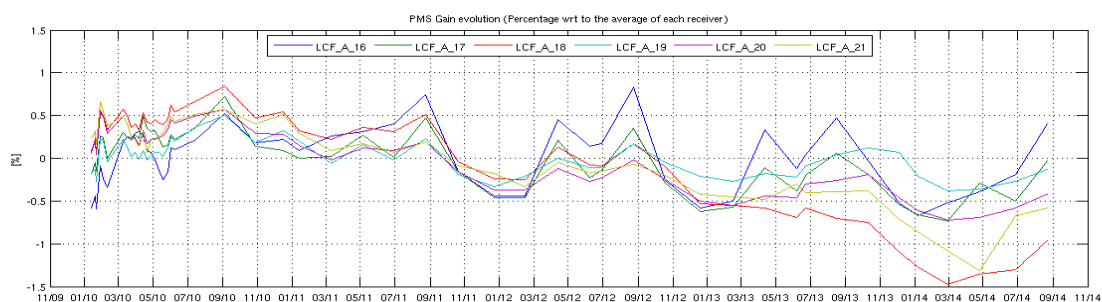




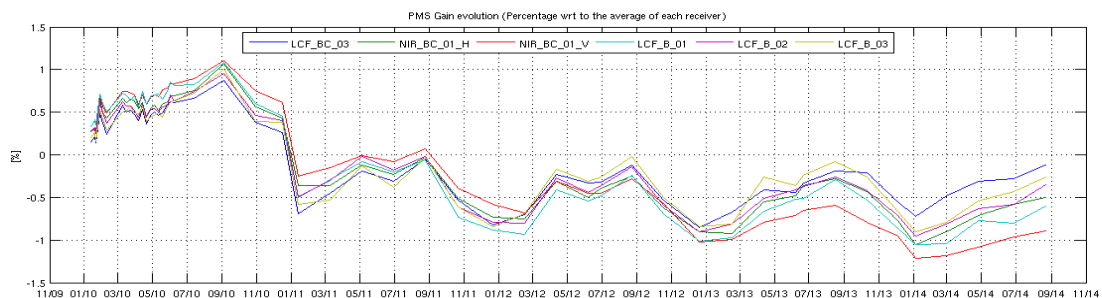
**Figure 9 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN A2**



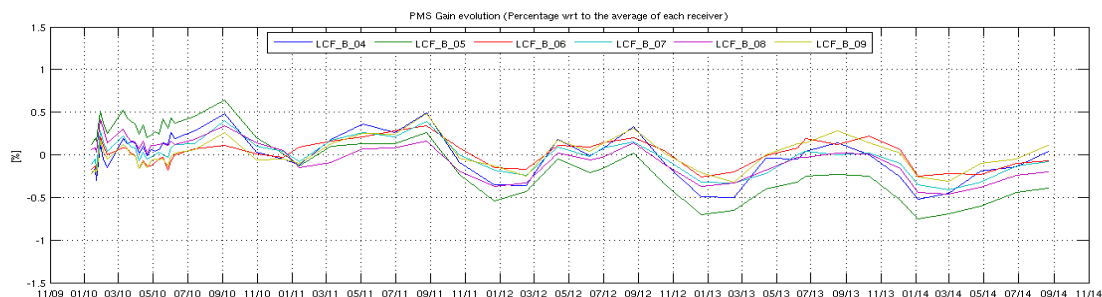
**Figure 10 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN A3**



**Figure 11 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN H2**

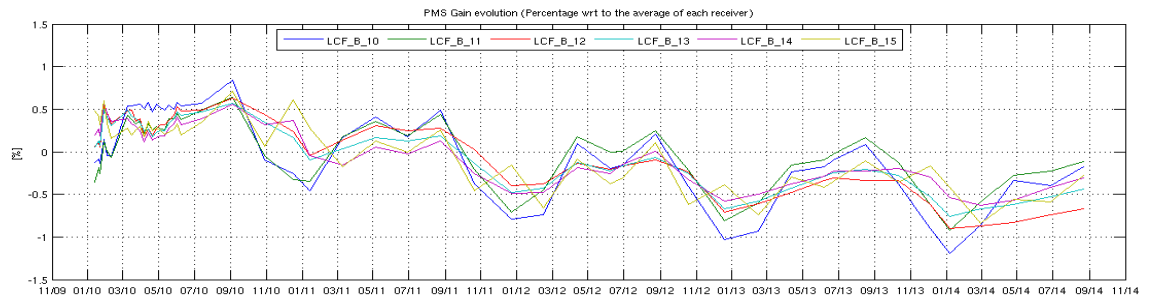


**Figure 12 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN B1**

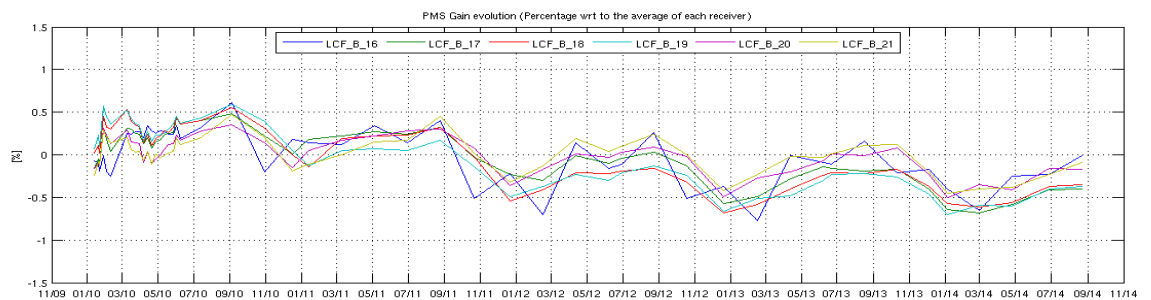




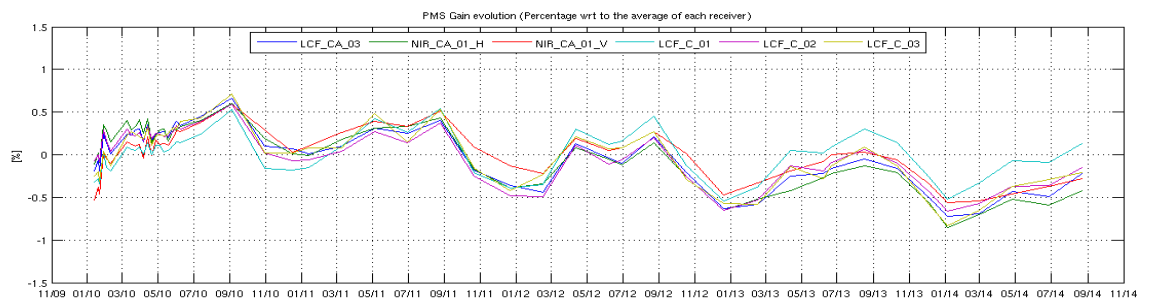
**Figure 13 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN B2**



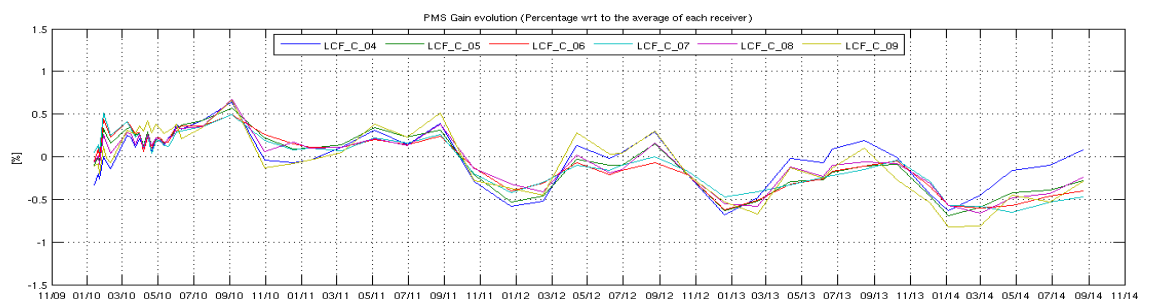
**Figure 14 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN B3**



**Figure 15 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN H3**

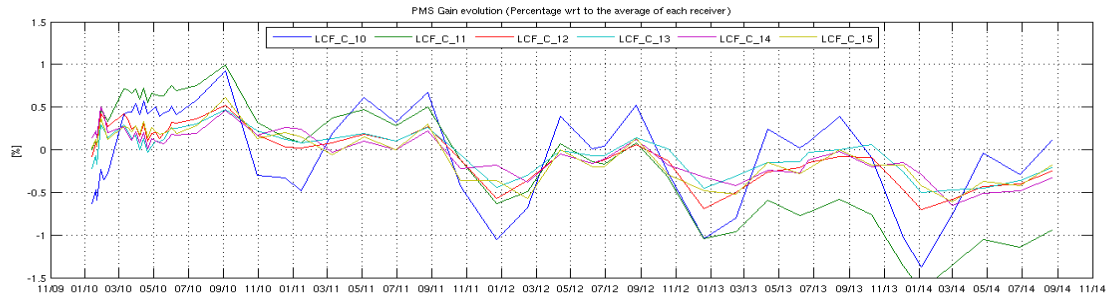


**Figure 16 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN C1**

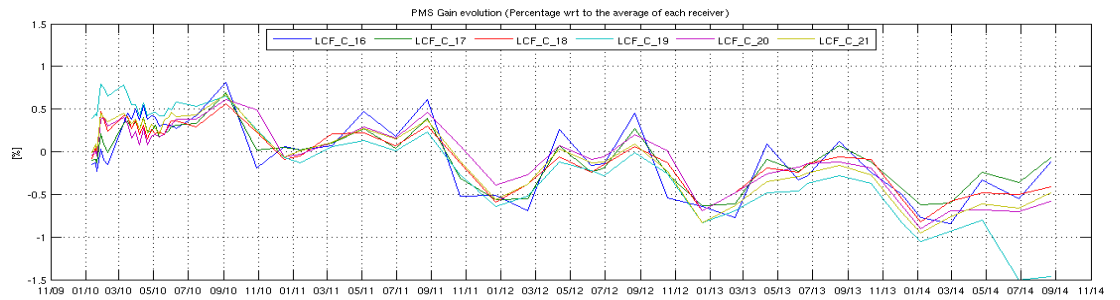




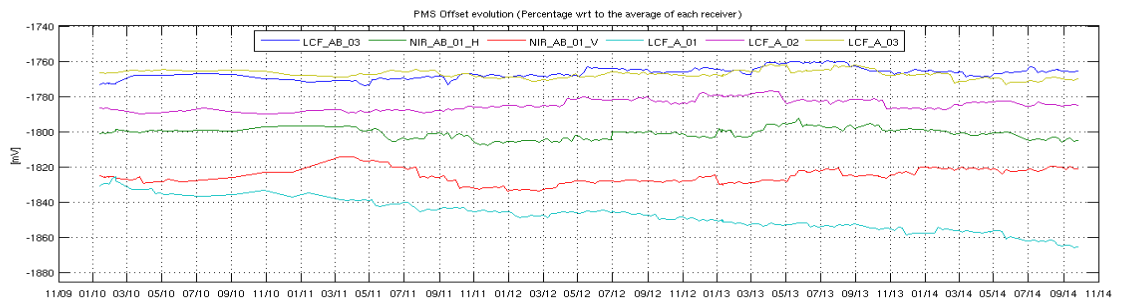
**Figure 17 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN C2**



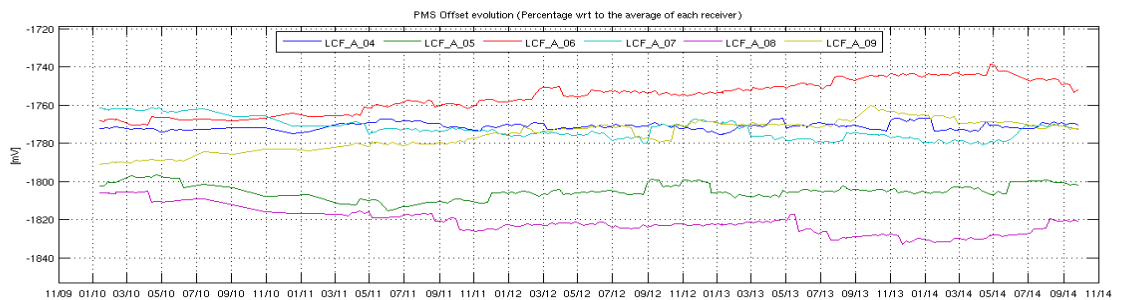
**Figure 18 Evolution of the  $\Delta$  PMS Gain of the LICEFS in CMN C3**



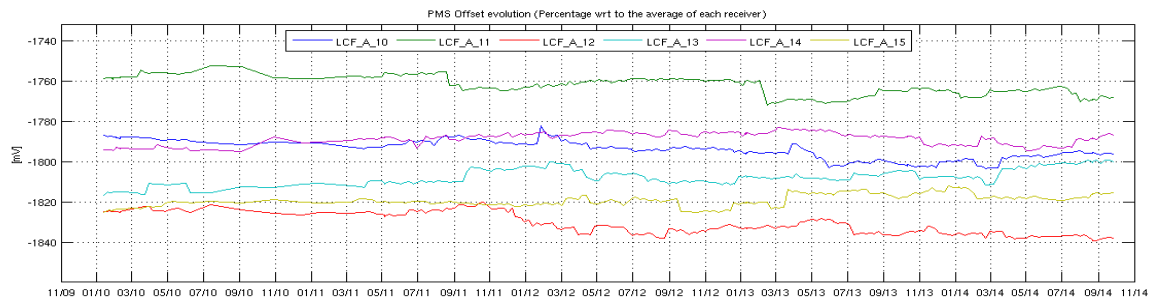
**Figure 19 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN H1**



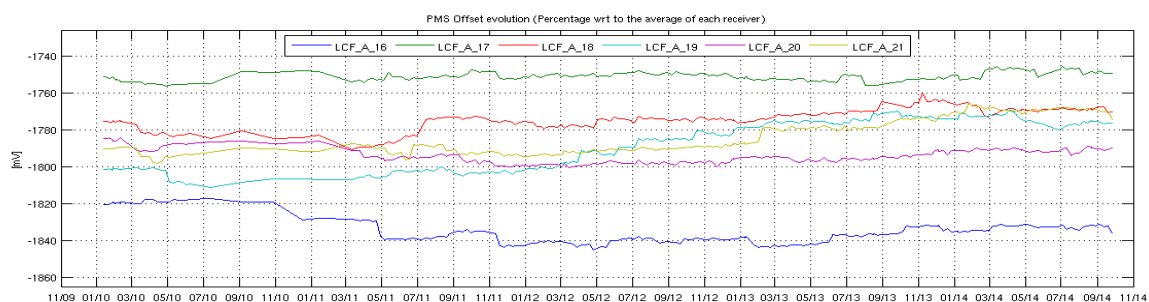
**Figure 20 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN A1**



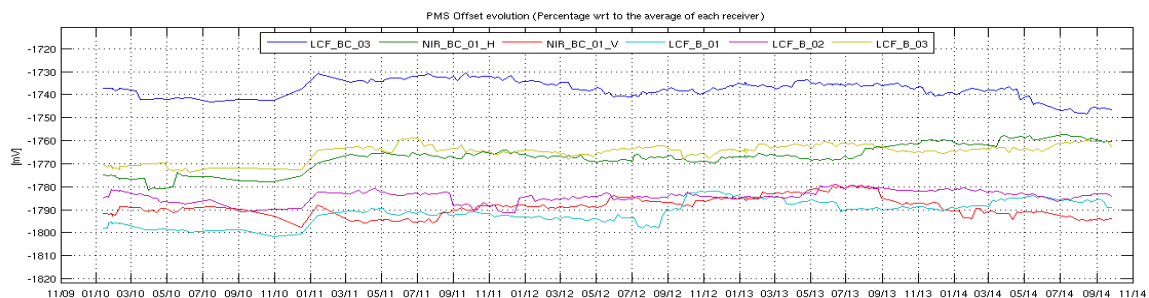
**Figure 21 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN A2**



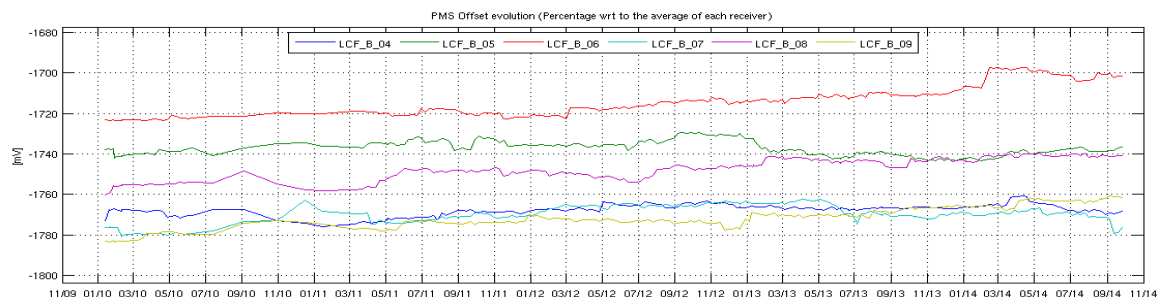
**Figure 22 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN A3**



**Figure 23 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN H2**

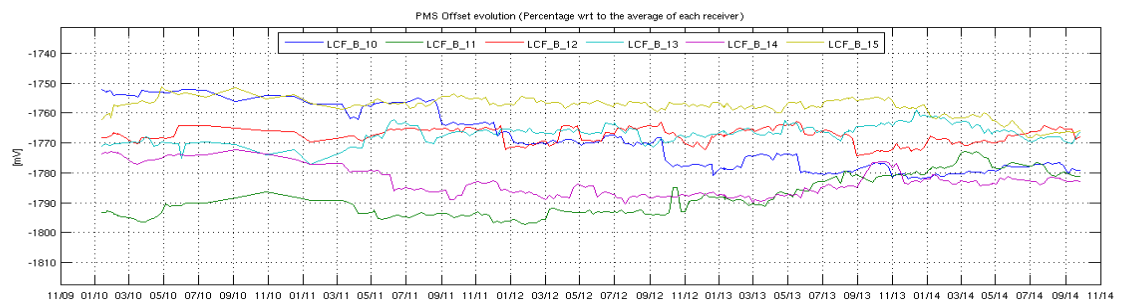


**Figure 24 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN B1**

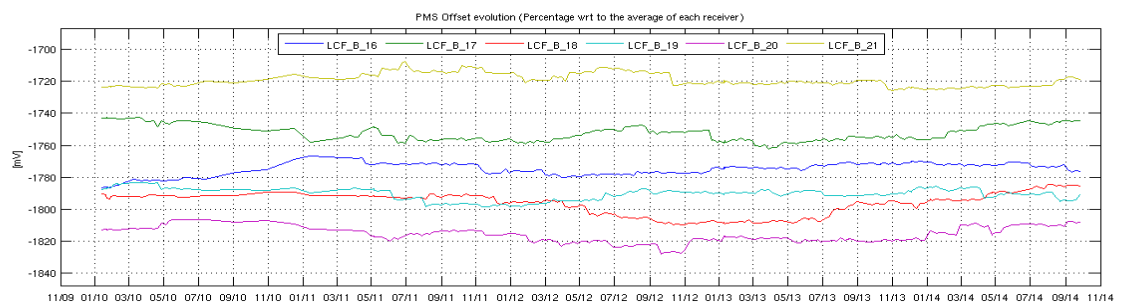




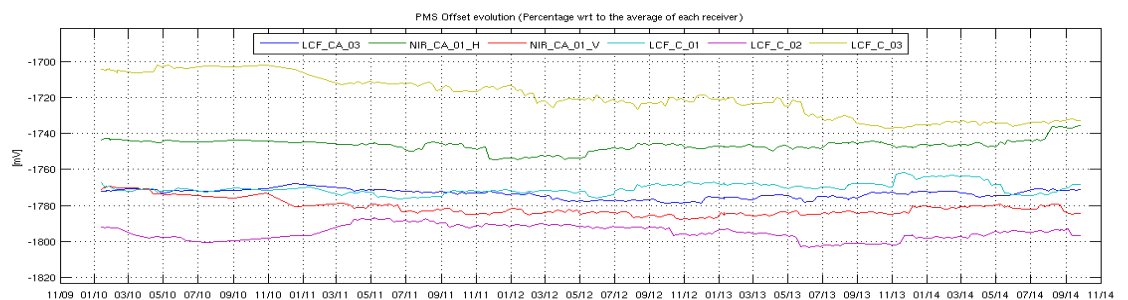
**Figure 25 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN B2**



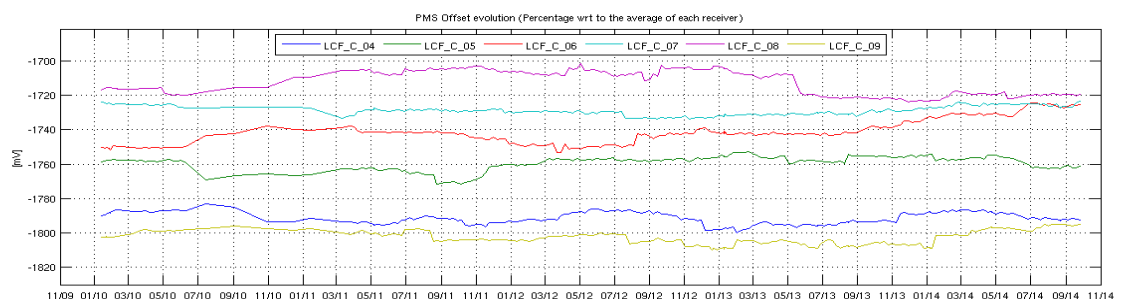
**Figure 26 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN B3**



**Figure 27 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN H3**



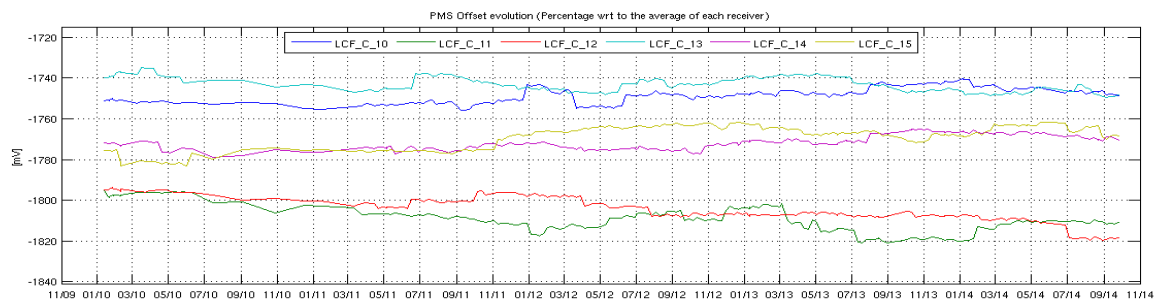
**Figure 28 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN C1**



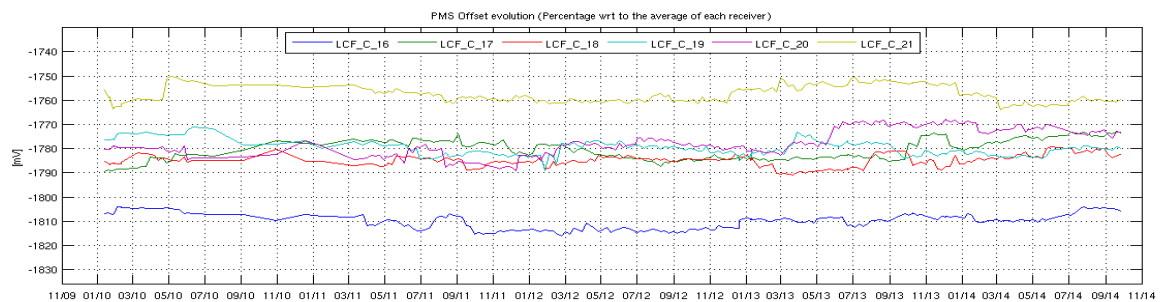




**Figure 29 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN C2**



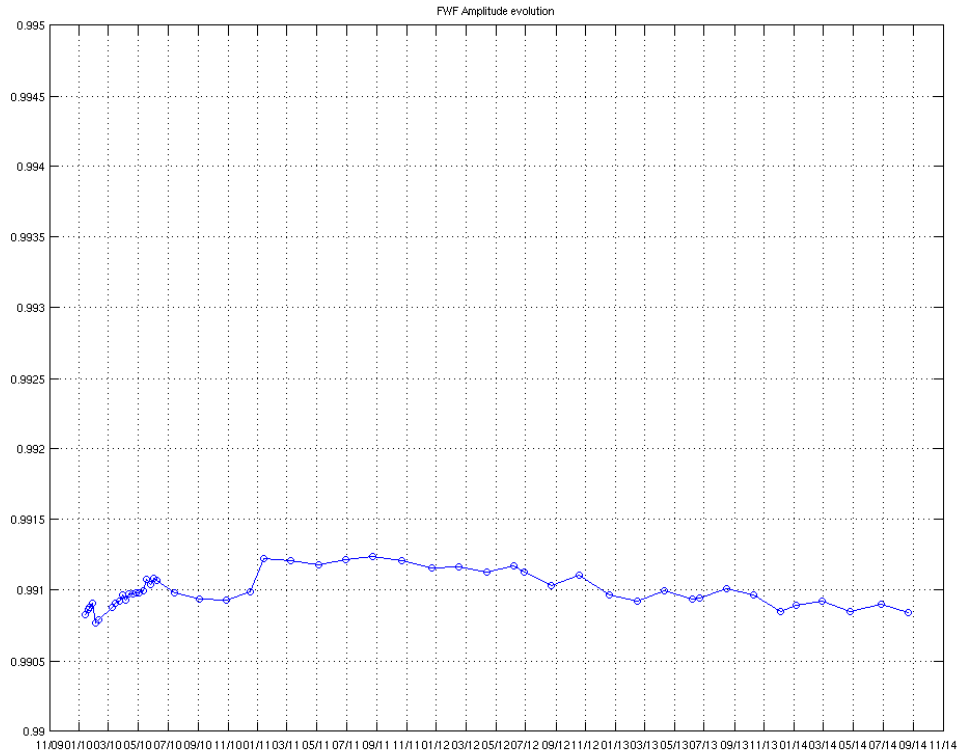
**Figure 30 Evolution of the  $\Delta$  PMS Offset of the LICEFS in CMN C3**



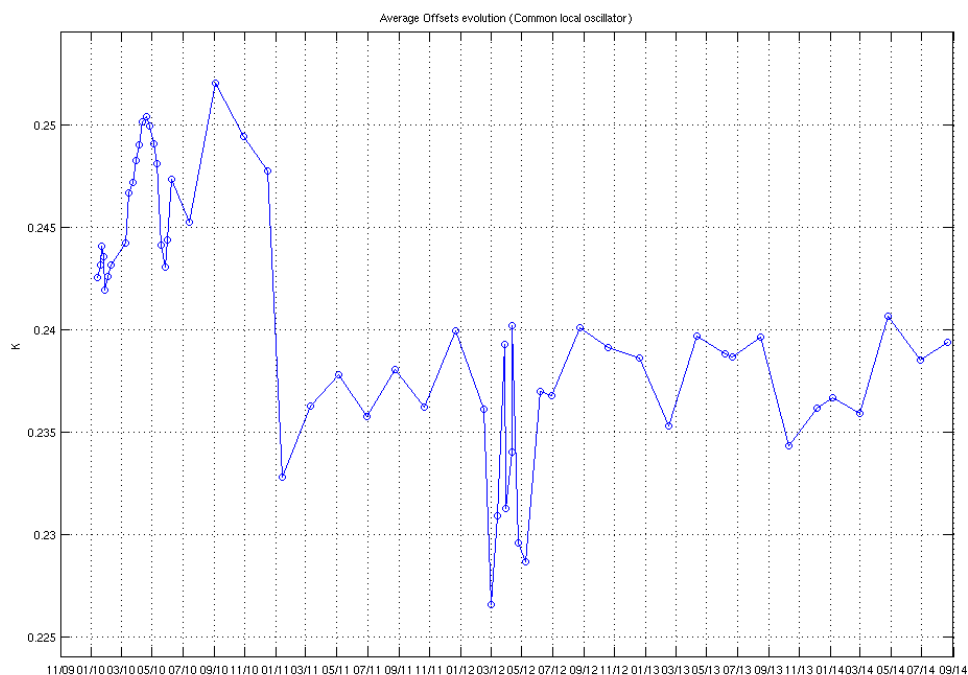




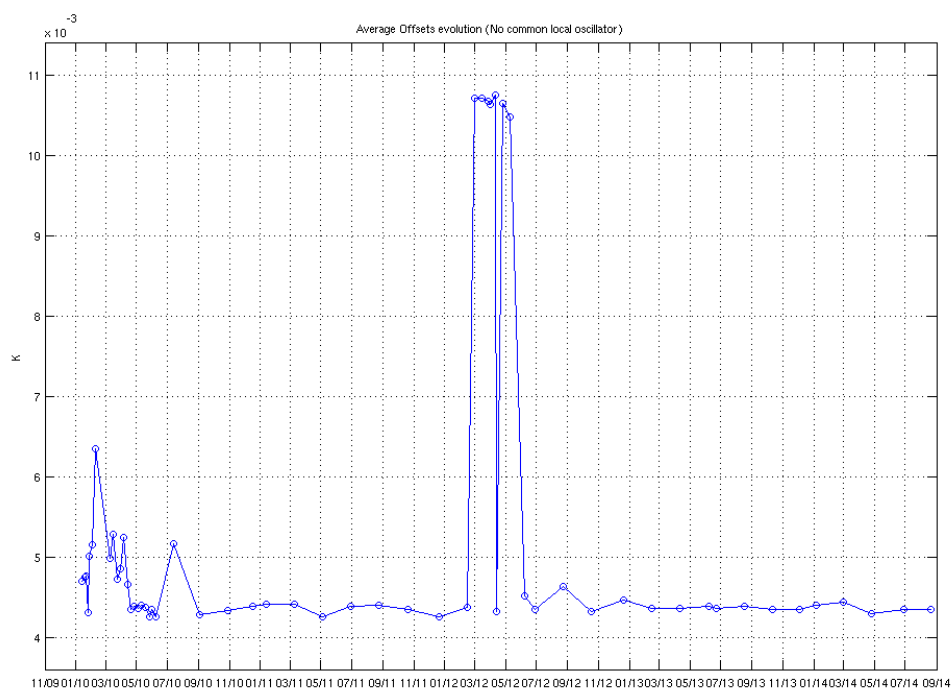
**Figure 31 Evolution of the average of the FWF Amplitude at the origin**



The evolution of the average of the correlator offsets does not show any significant drift. Also, the correlation offsets between receivers that do not share local oscillator remains much smaller than the correlation offsets between receivers sharing local oscillator. This result is expected since any residual correlated signal arriving to a pair of receivers arrives through the local oscillator signal. On the other hand, the measurement of the correlator offsets acquired between 29th February to 7th June 2012 are noisier because they have been derived using only 122 samples from the NIR calibration events whereas the long calibrations provide 846 samples. The average and maximum difference in brightness temperature between using the nominal calibration and the values obtained from the NIR calibration events are 0.03 K and 0.4 K, respectively.



**Figure 32 Evolution of the average of the Correlator offsets for the baselines which share local oscillator**



**Figure 33 Evolution of the average of the Correlator offsets for the baselines which do not share local oscillator**



## 6. PRODUCT QUALITY ANALYSIS

The data quality during September has found to be nominal except in the time intervals listed in the section 4.5.

The L1 production is nominal as no artefacts are observed in the Stokes maps in Figure 34 to Figure 61. The figures plot the Stokes parameter computed at 42.5 deg from the L1C Browse products. All the artificial patterns in the images can be explained by the presence of RFIs. The impact of the RFI in the brightness temperature measurements over land can be observed mainly in Europe and Asia.

Two RFIs has been detected in this reporting period over the North Atlantic and Pacific Oceans.

The third Stokes parameter (Real part of XY) shows a clear pattern between ascending and descending pass due to the different values of the Total Electron Content in the atmosphere for morning / evening orbits. Strong values of the third Stokes parameter are related to RFI. The fourth Stokes parameter (Imaginary part of XY) shows as expected a mean value around zero. Strong values of the fourth Stokes parameter are related to RFI.

The L2 Soil Moisture and Ocean Salinity production is nominal in the reporting period. Figure 62 shows the evolution of the soil moisture retrievals. Those values present significant differences with the Volumetric Soil Water at L1 (see figure 63) provided by ECMWF, mainly for the ascending passes. The Level 2 ESL has pointed out that the possible cause is that the predicted precipitation event might not actually occur. An important lack of soil moisture retrievals in the selected area that are polluted by the presence of RFI and frozen soil that does not allow soil moisture retrieval. For more detail on Soil Moisture retrieval algorithm see the L2 Soil Moisture Algorithm Theoretical Baseline Document:

([https://earth.esa.int/c/document\\_library/get\\_file?folderId=127856&name=DLFE-1633.pdf](https://earth.esa.int/c/document_library/get_file?folderId=127856&name=DLFE-1633.pdf)).

Figure 34 1st Stokes evolution over land during the reporting period (week 1)

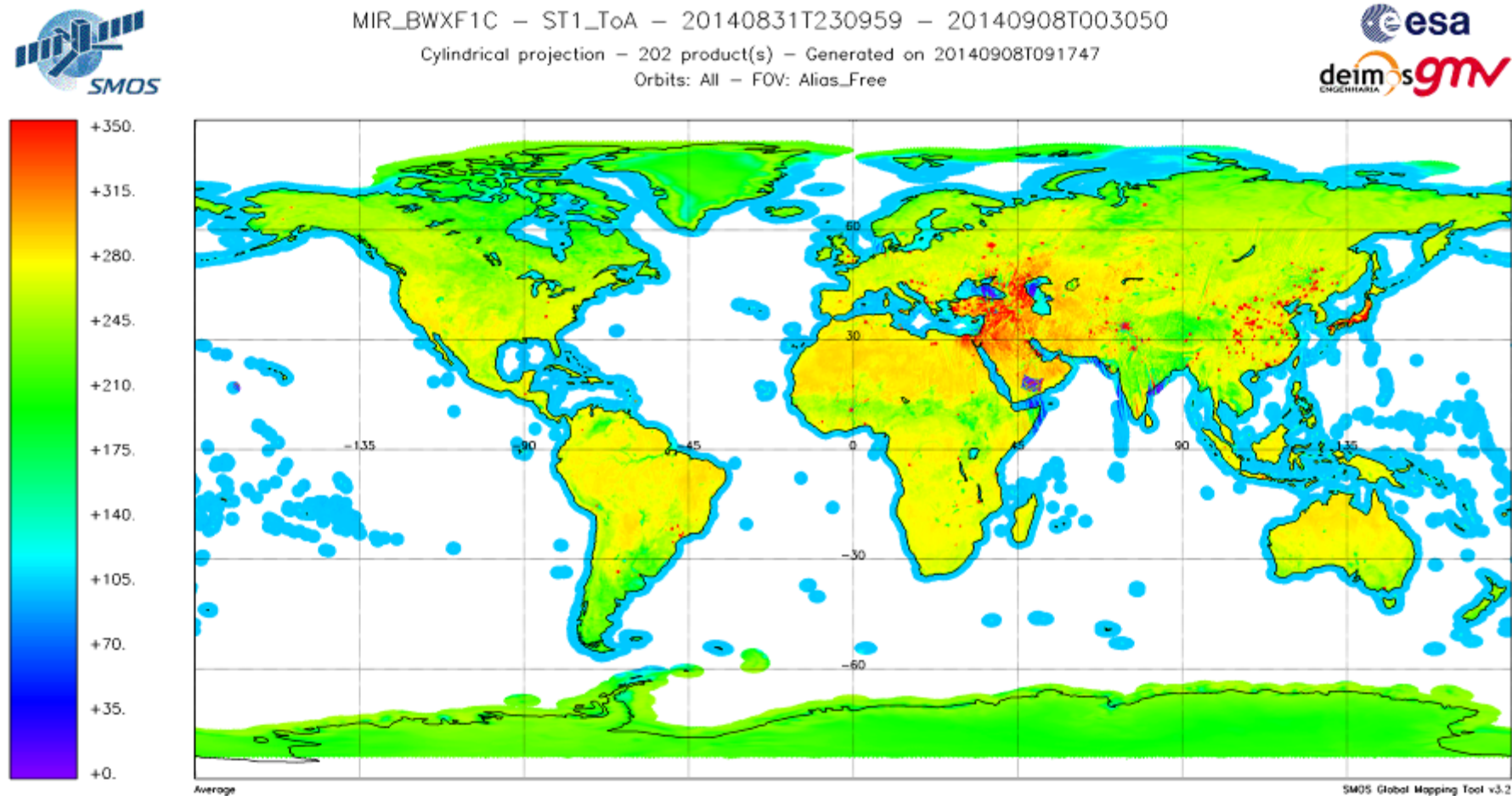


Figure 35 1st Stokes evolution over land during the reporting period (week 2)

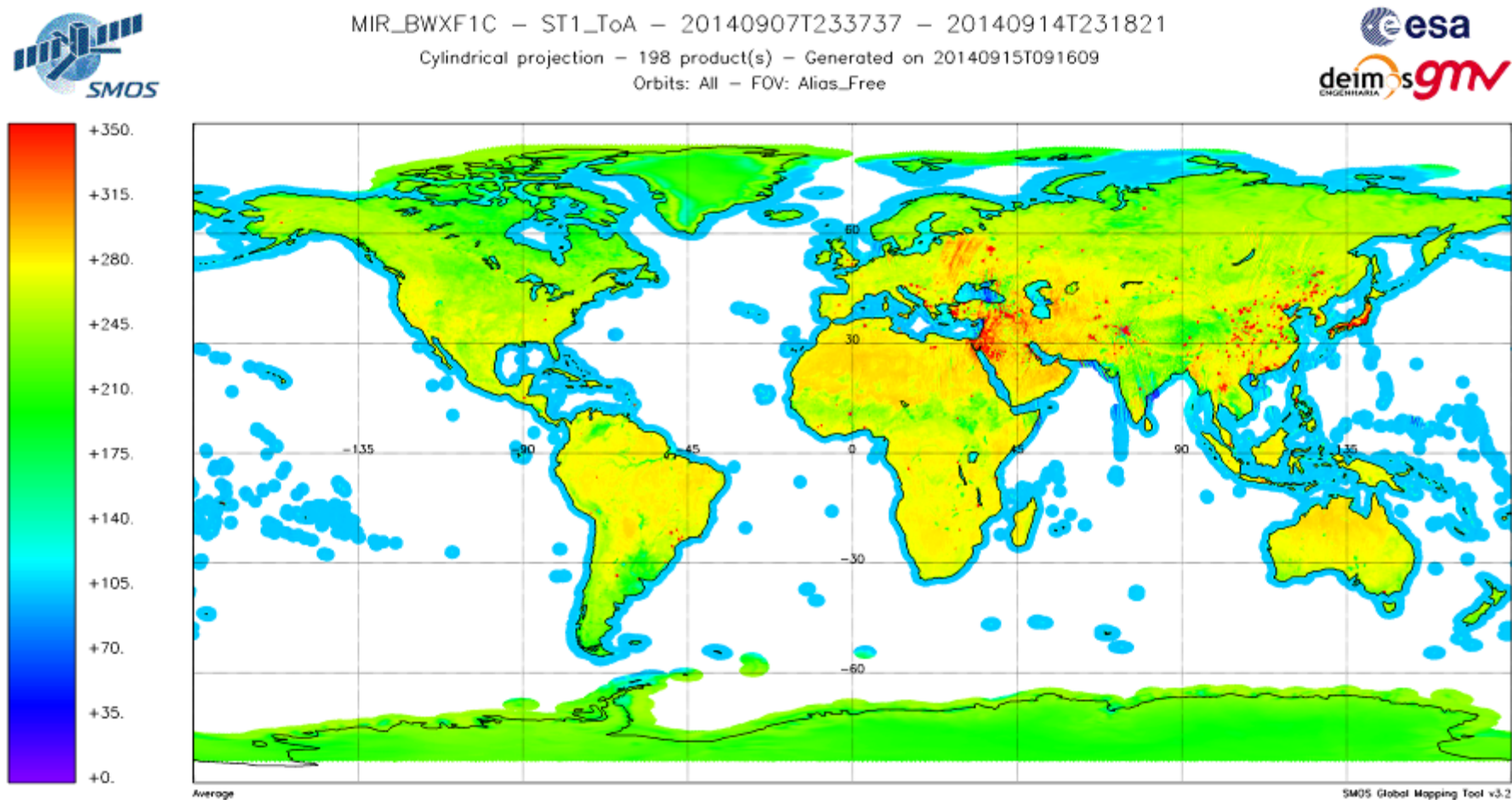




Figure 36 1st Stokes evolution over land during the reporting period (week 3)

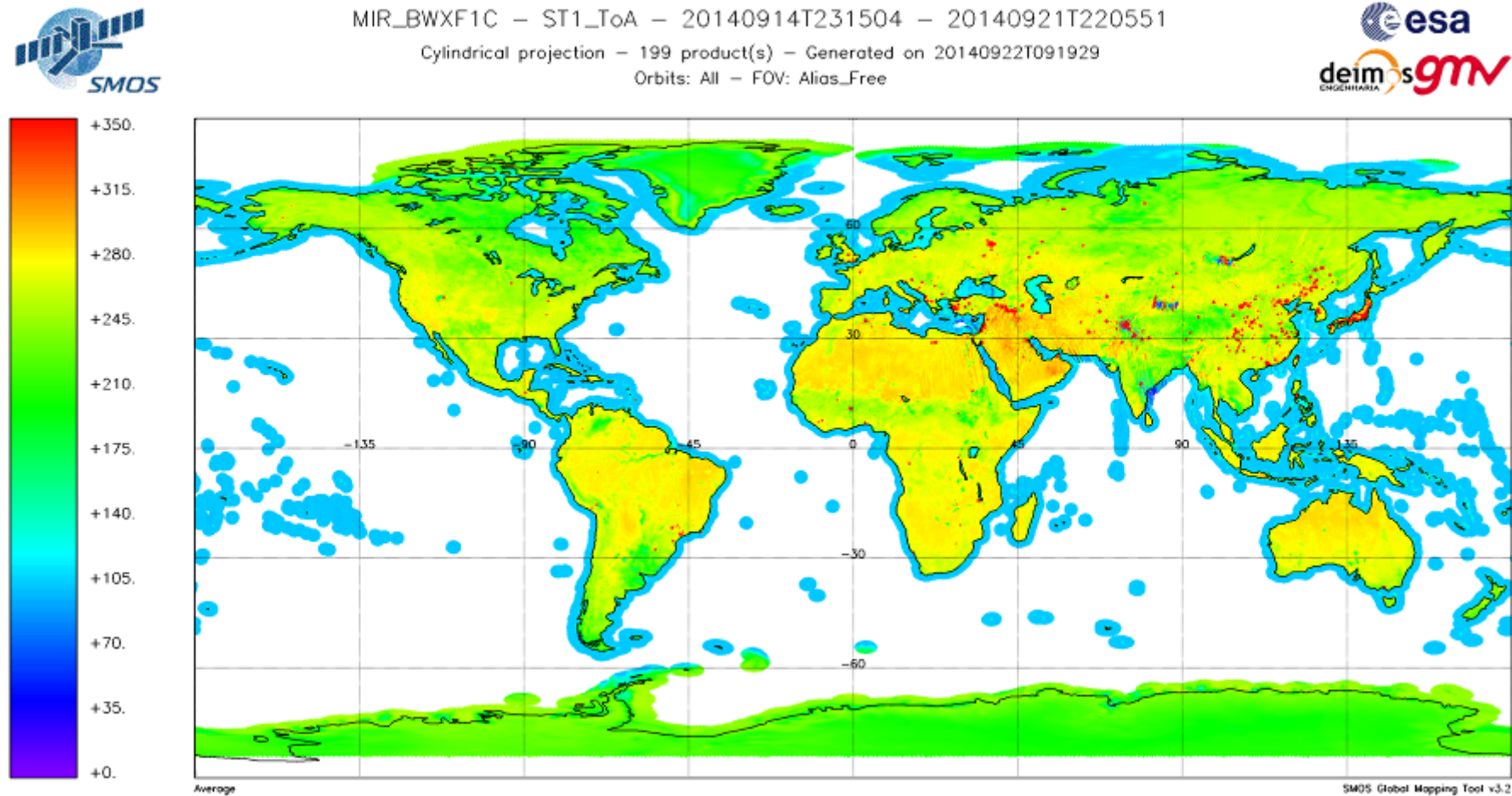


Figure 37 1st Stokes evolution over land during the reporting period (week 4)



MIR\_BWXF1C - ST1\_ToA - 20140921T234237 - 20140929T001325

Cylindrical projection - 202 product(s) - Generated on 20140929T091735

Orbits: All - FOV: Alias\_Free

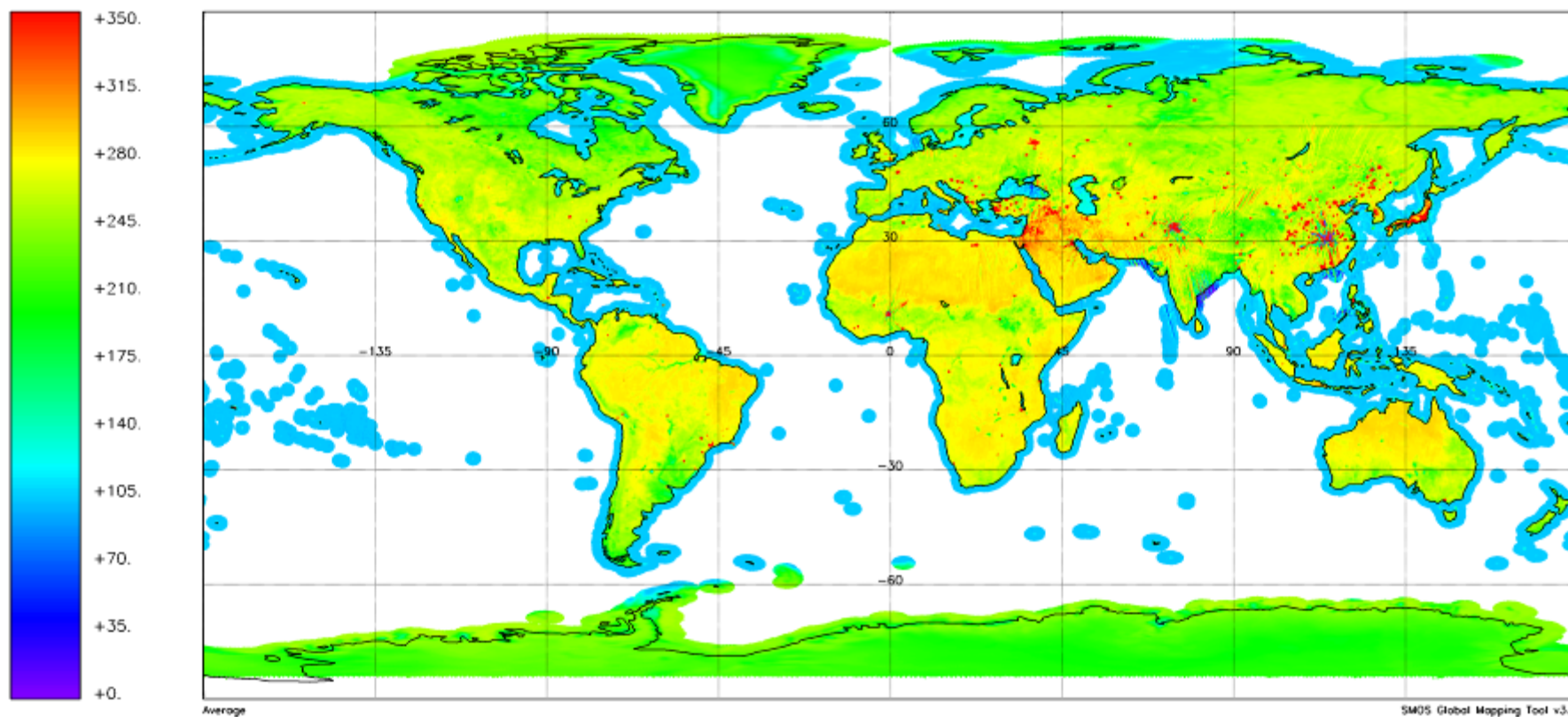


Figure 38 1st Stokes evolution over land during the reporting period (week 5)

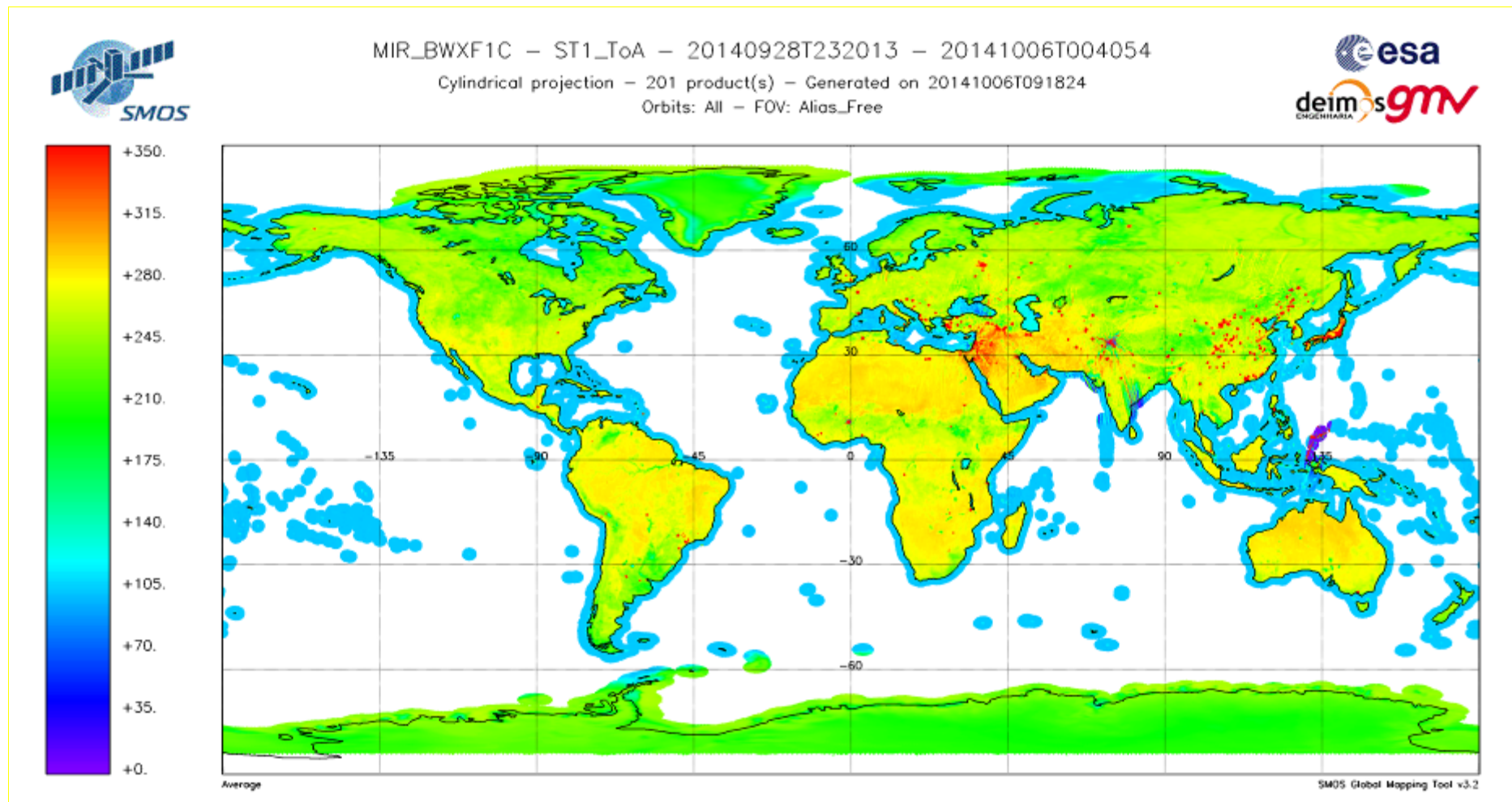




Figure 39 Real Part of the XY Brightness temperature evolution over land during the reporting period (week 1)

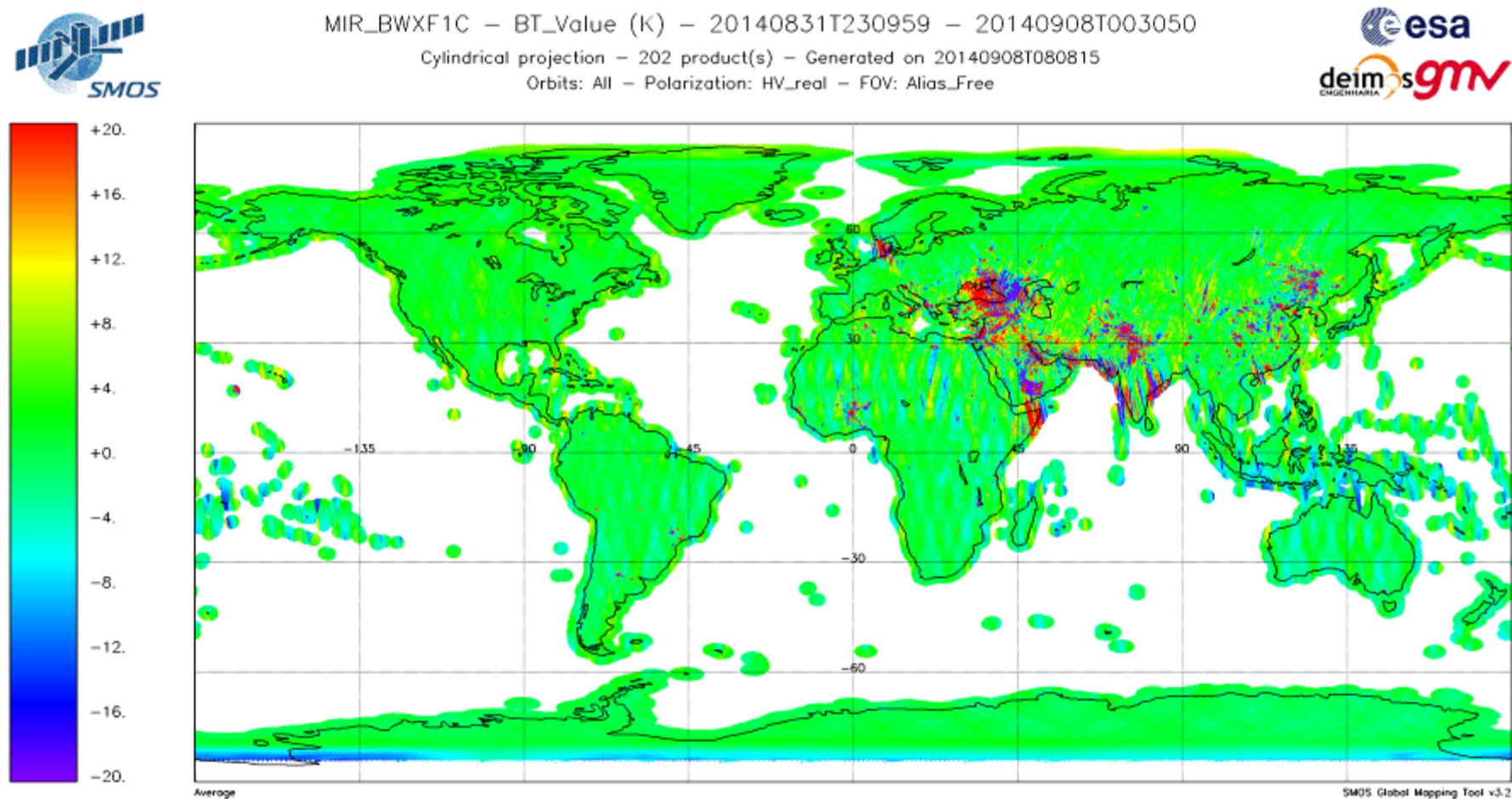


Figure 40 Real Part of the XY Brightness temperature evolution over land during the reporting period (week 2)

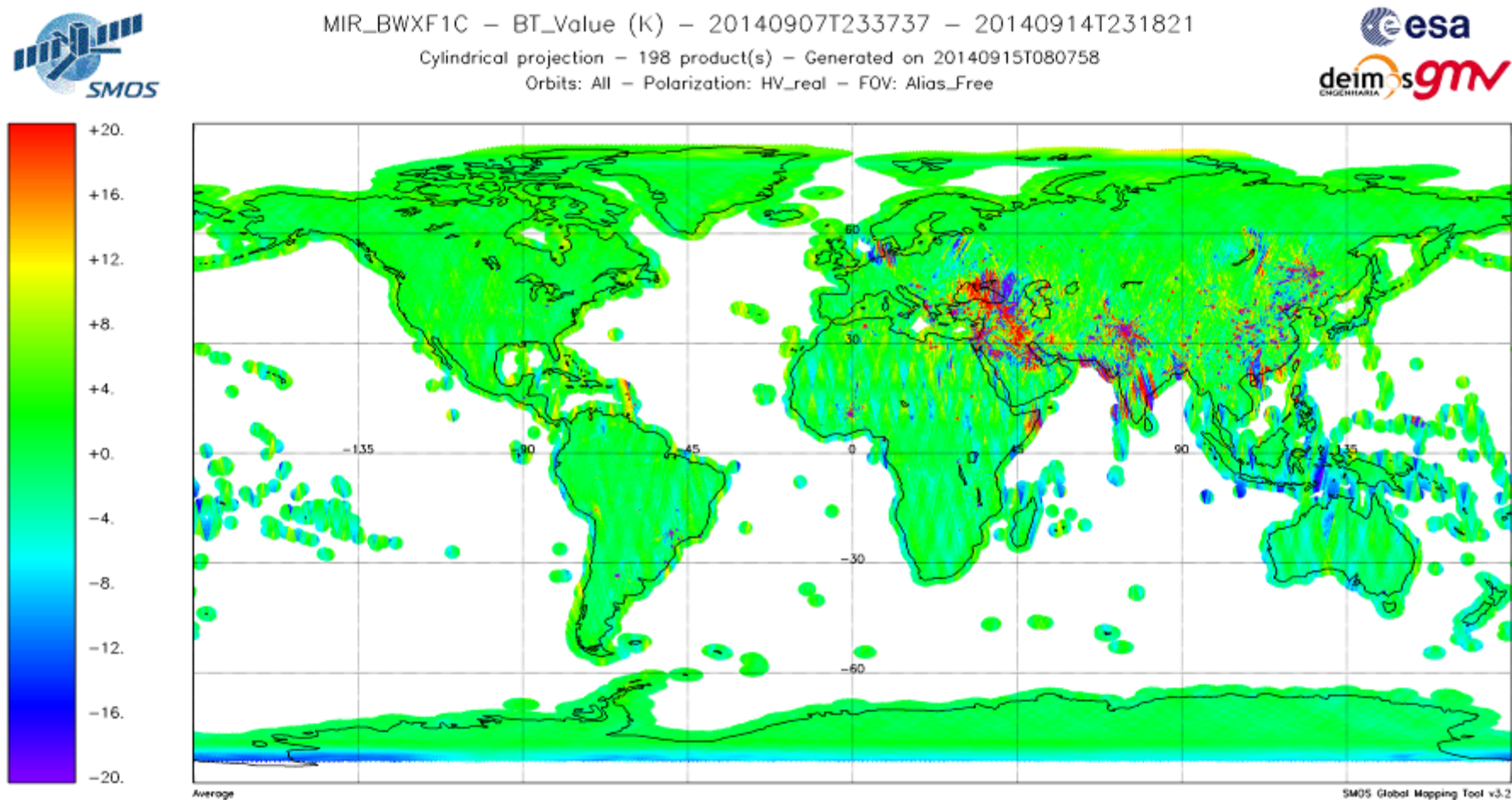


Figure 41 Real Part of the XY Brightness temperature evolution over land during the reporting period (week 3)

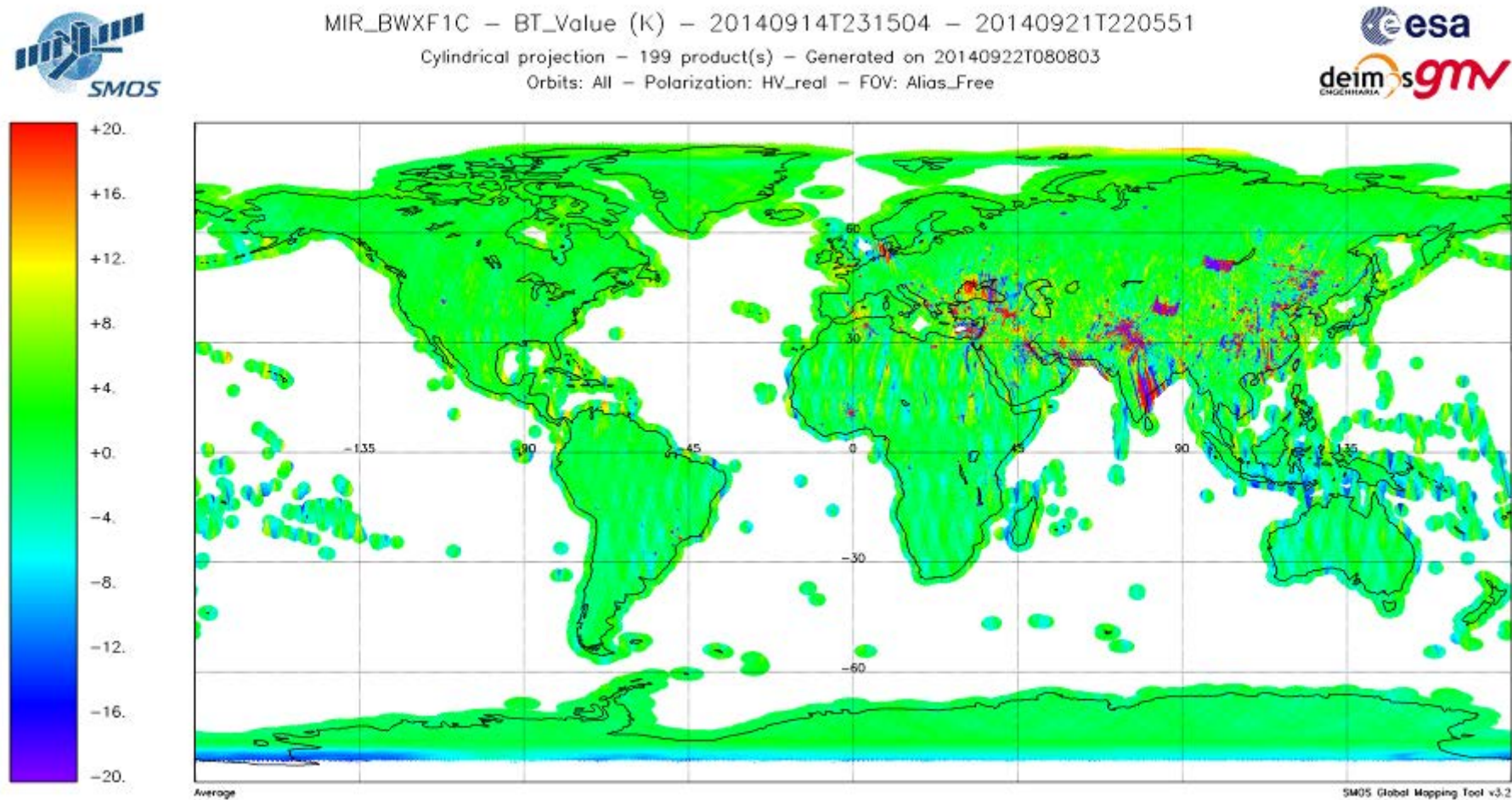




Figure 42 Real Part of the XY Brightness temperature evolution over land during the reporting period (week 4)

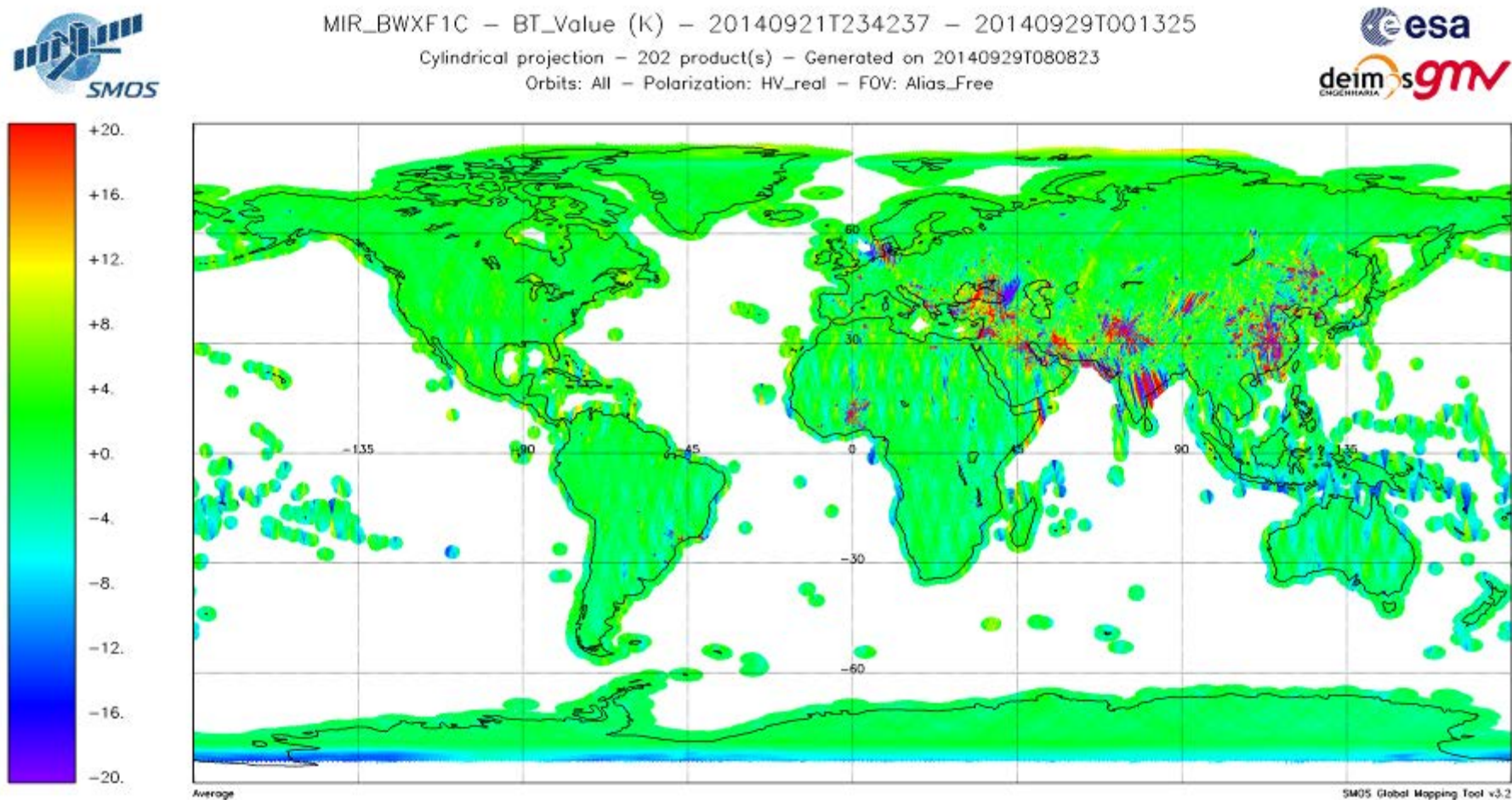


Figure 43 Real Part of the XY Brightness temperature evolution over land during the reporting period (week 5)

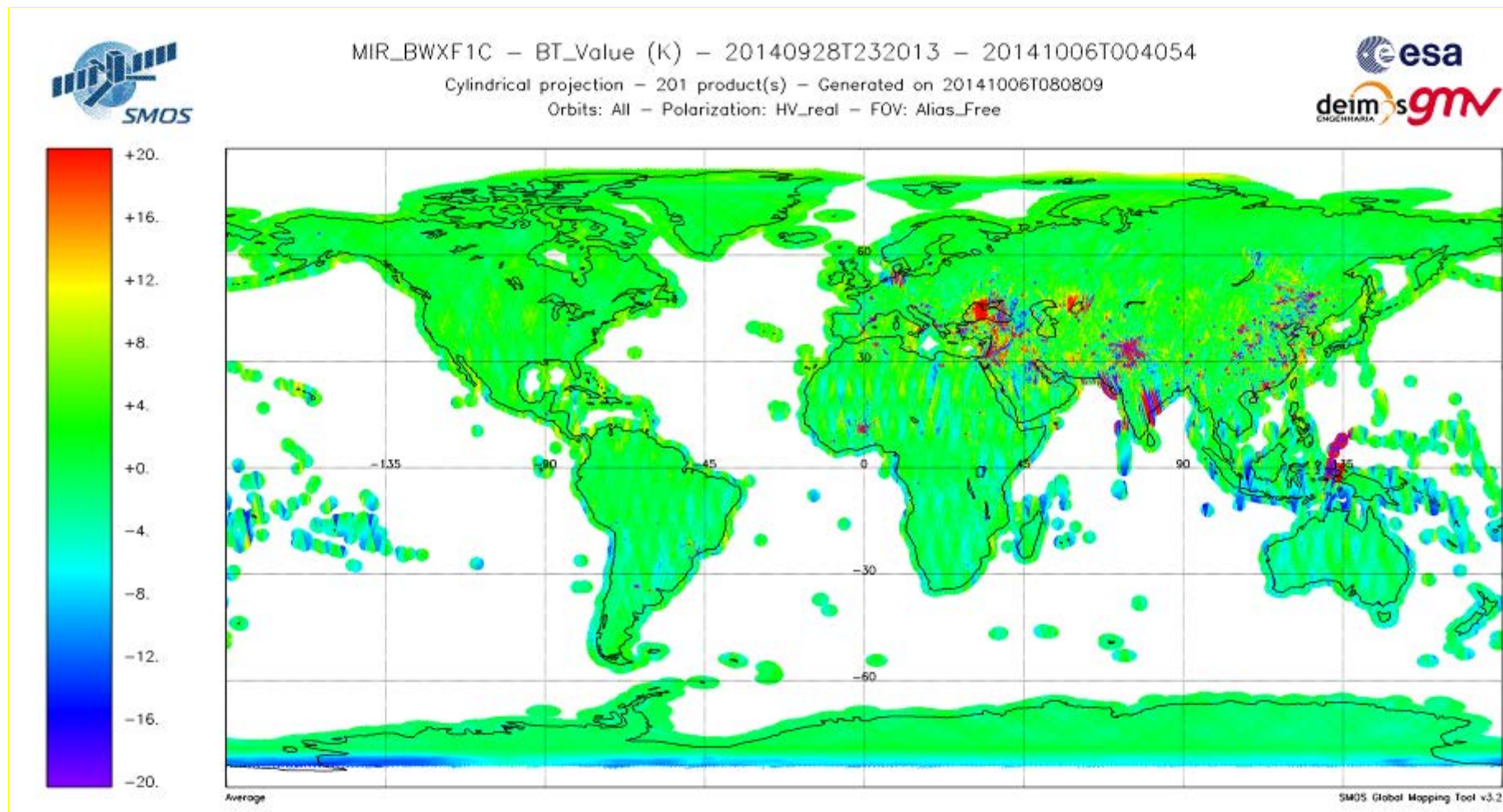




Figure 44 Imaginary Part of the XY Brightness temperature evolution over land during the reporting period (week 1)

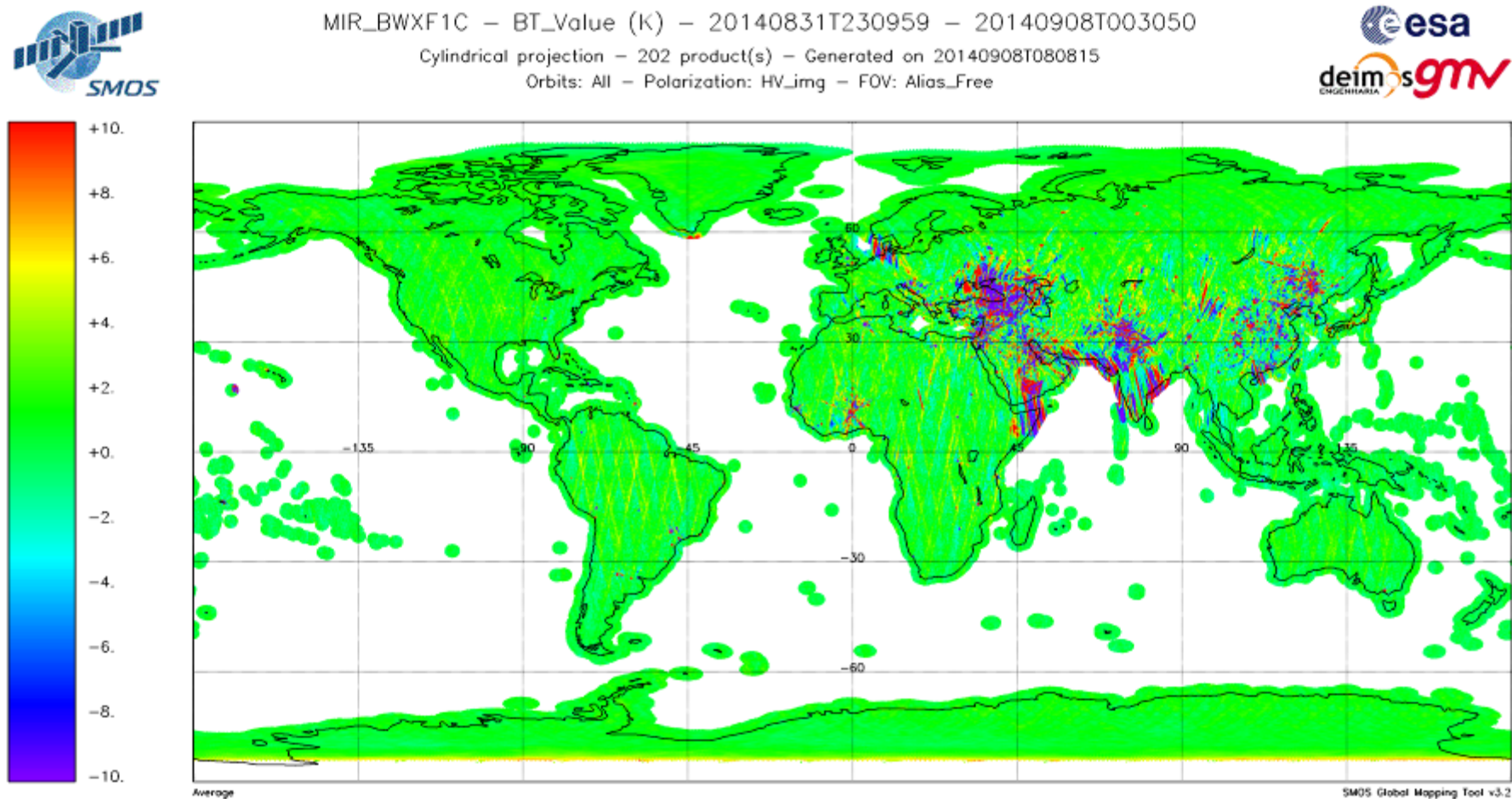


Figure 45 Imaginary Part of the XY Brightness temperature evolution over land during the reporting period (week 2)

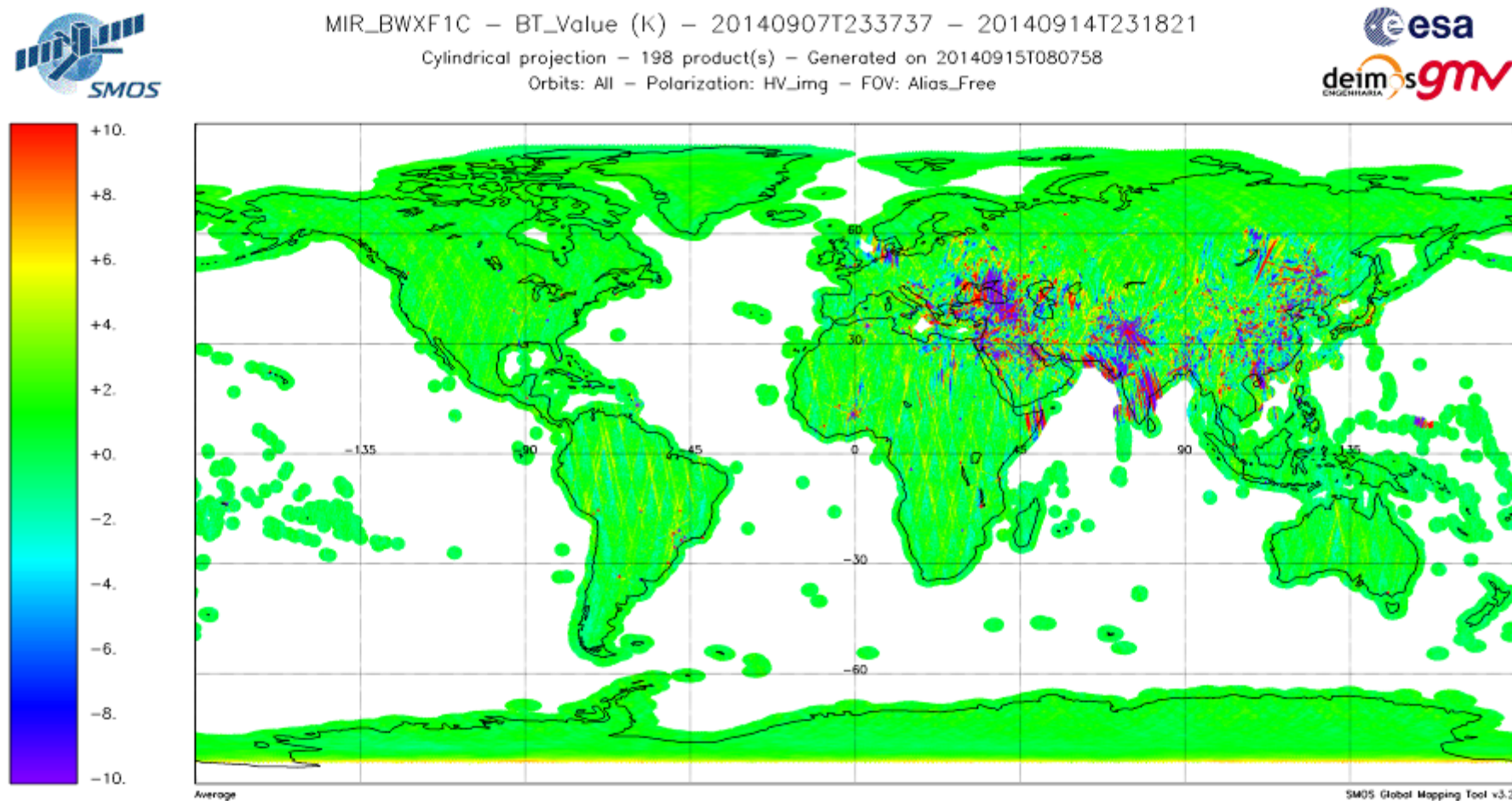


Figure 46 Imaginary Part of the XY Brightness temperature evolution over land during the reporting period (week 3)

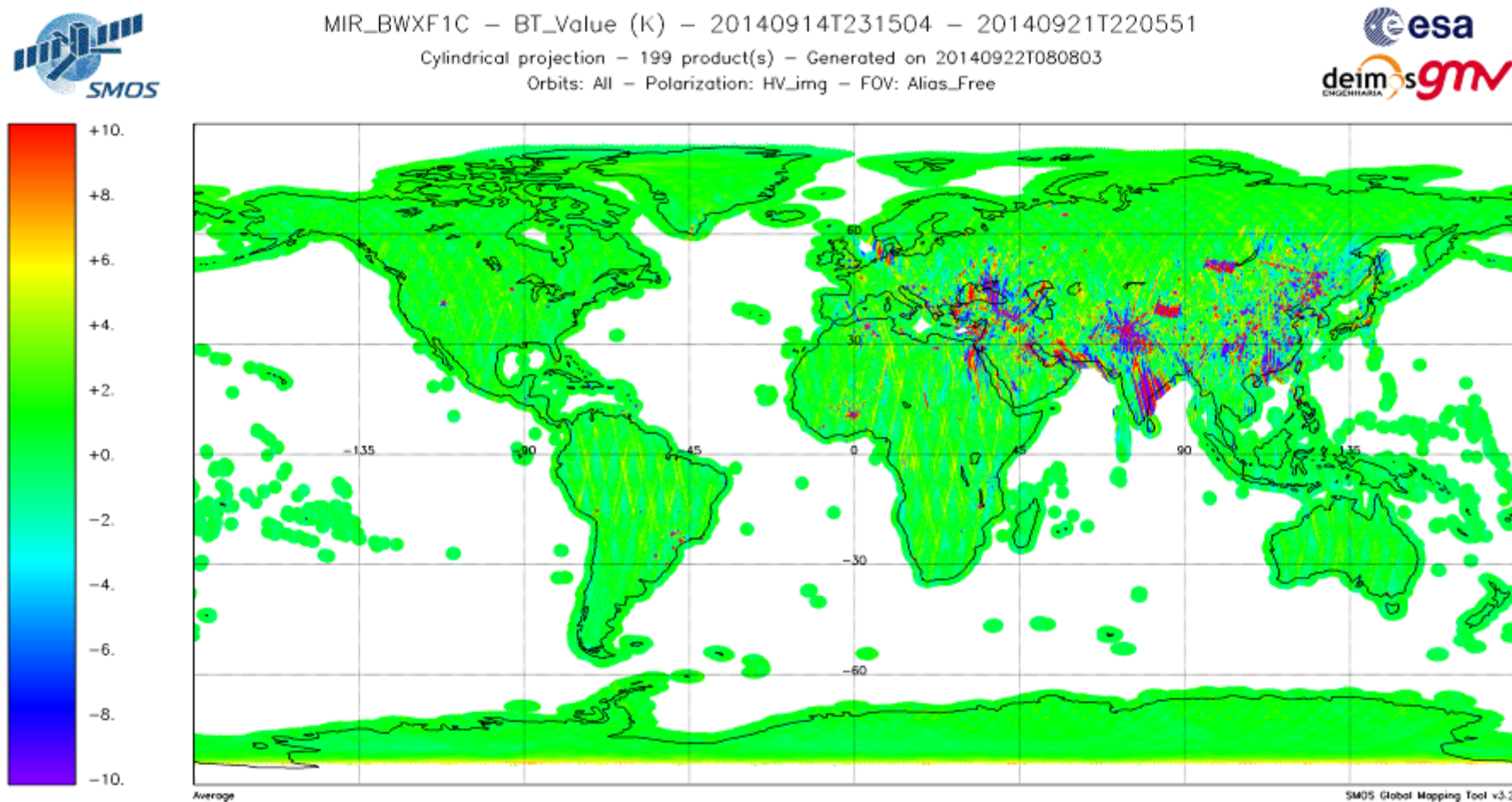




Figure 47 Imaginary Part of the XY Brightness temperature evolution over land during the reporting period (week 4)

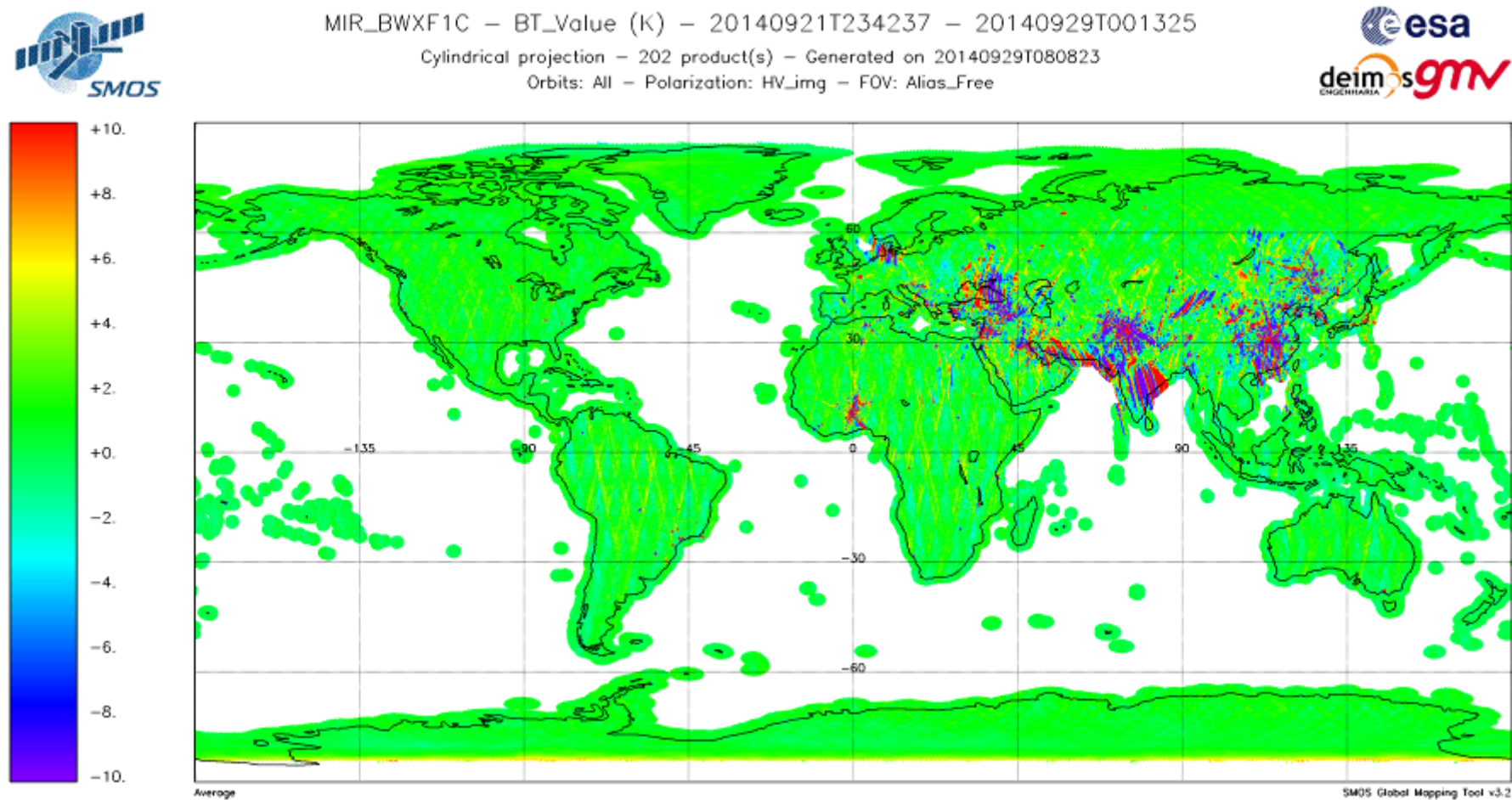


Figure 48 Imaginary Part of the XY Brightness temperature evolution over land during the reporting period (week 5)

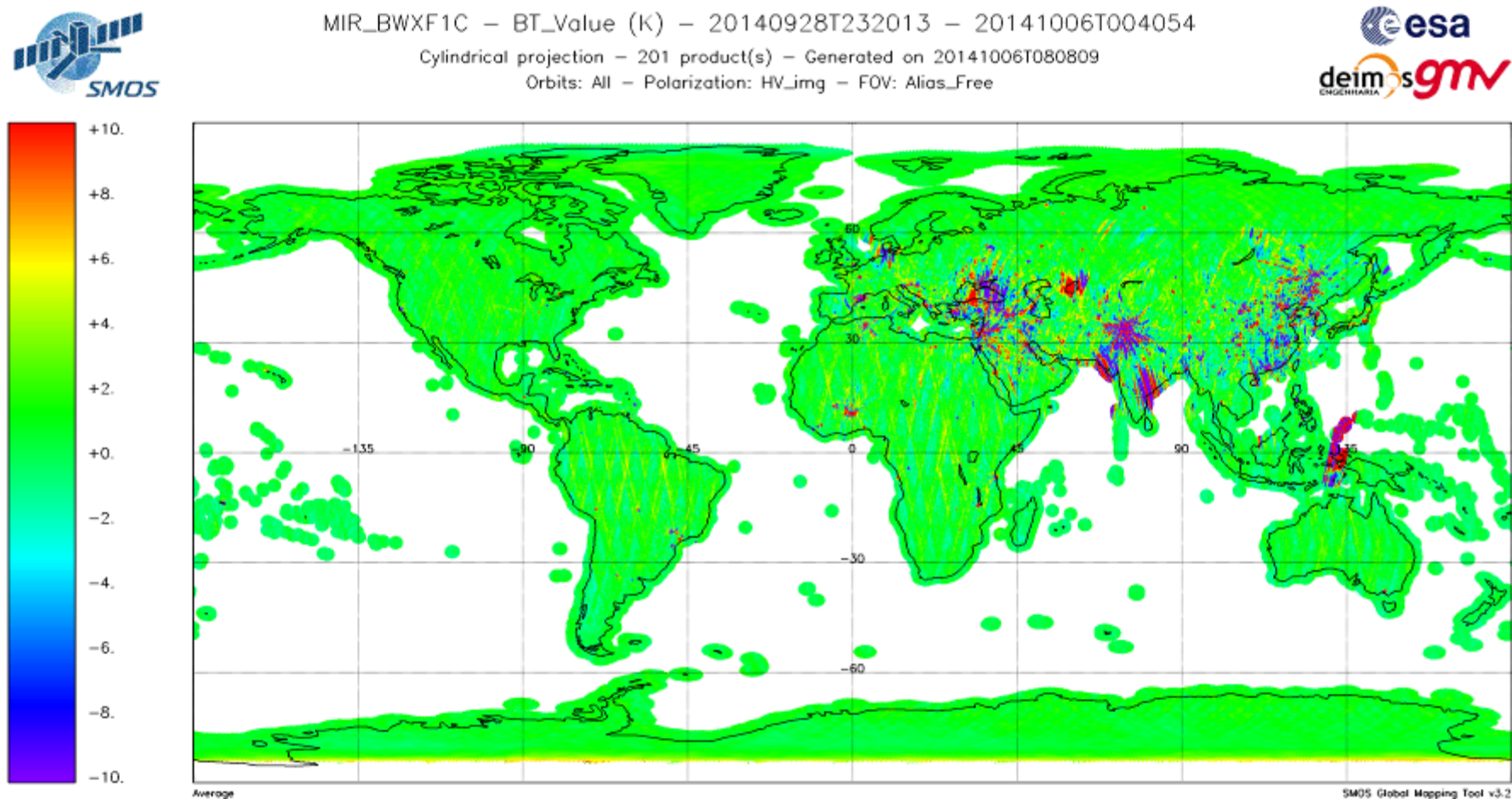




Figure 49 1st Stokes evolution over sea during the reporting period (week 1)

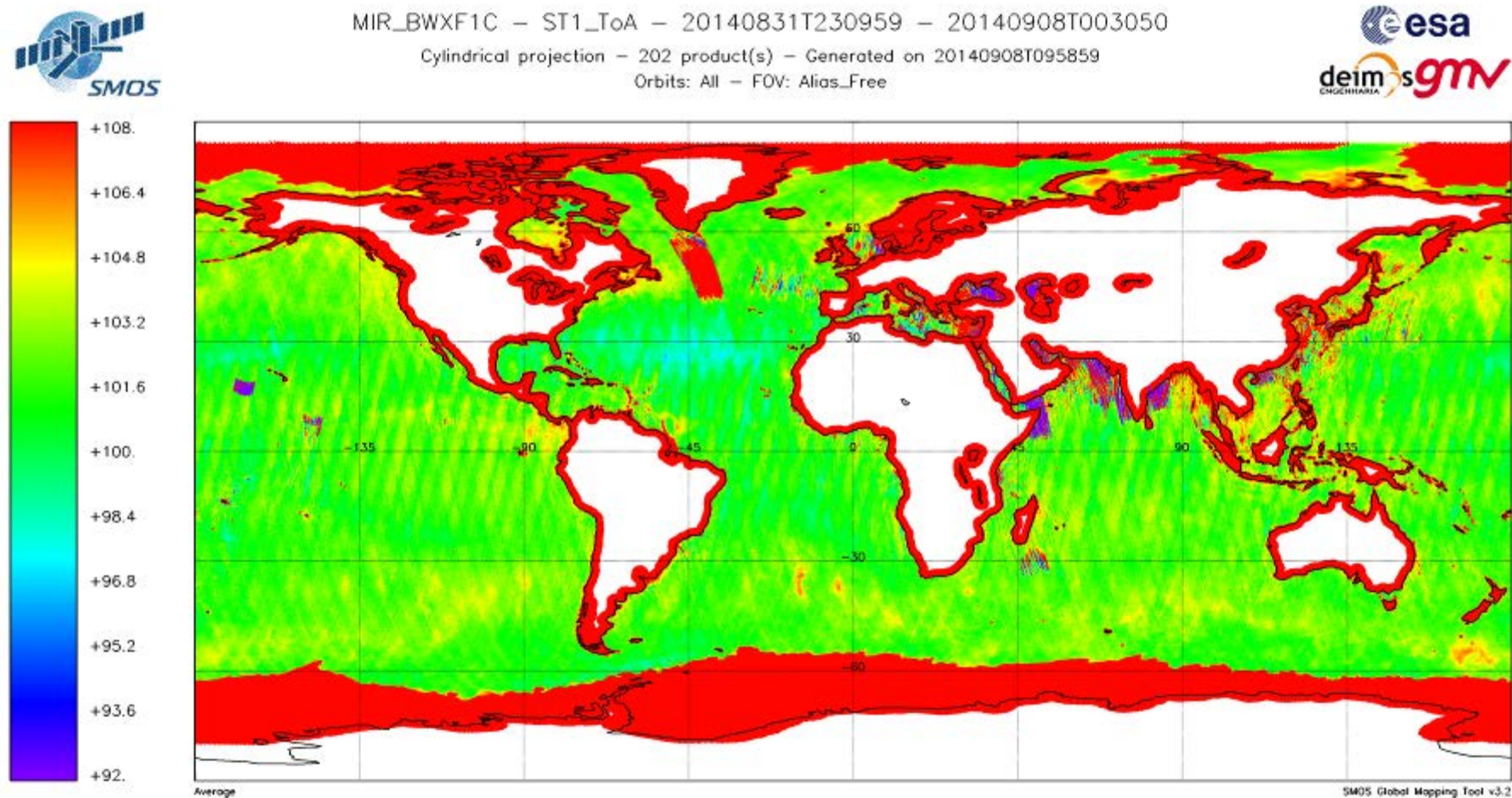


Figure 50 1st Stokes evolution over sea during the reporting period (week 2)

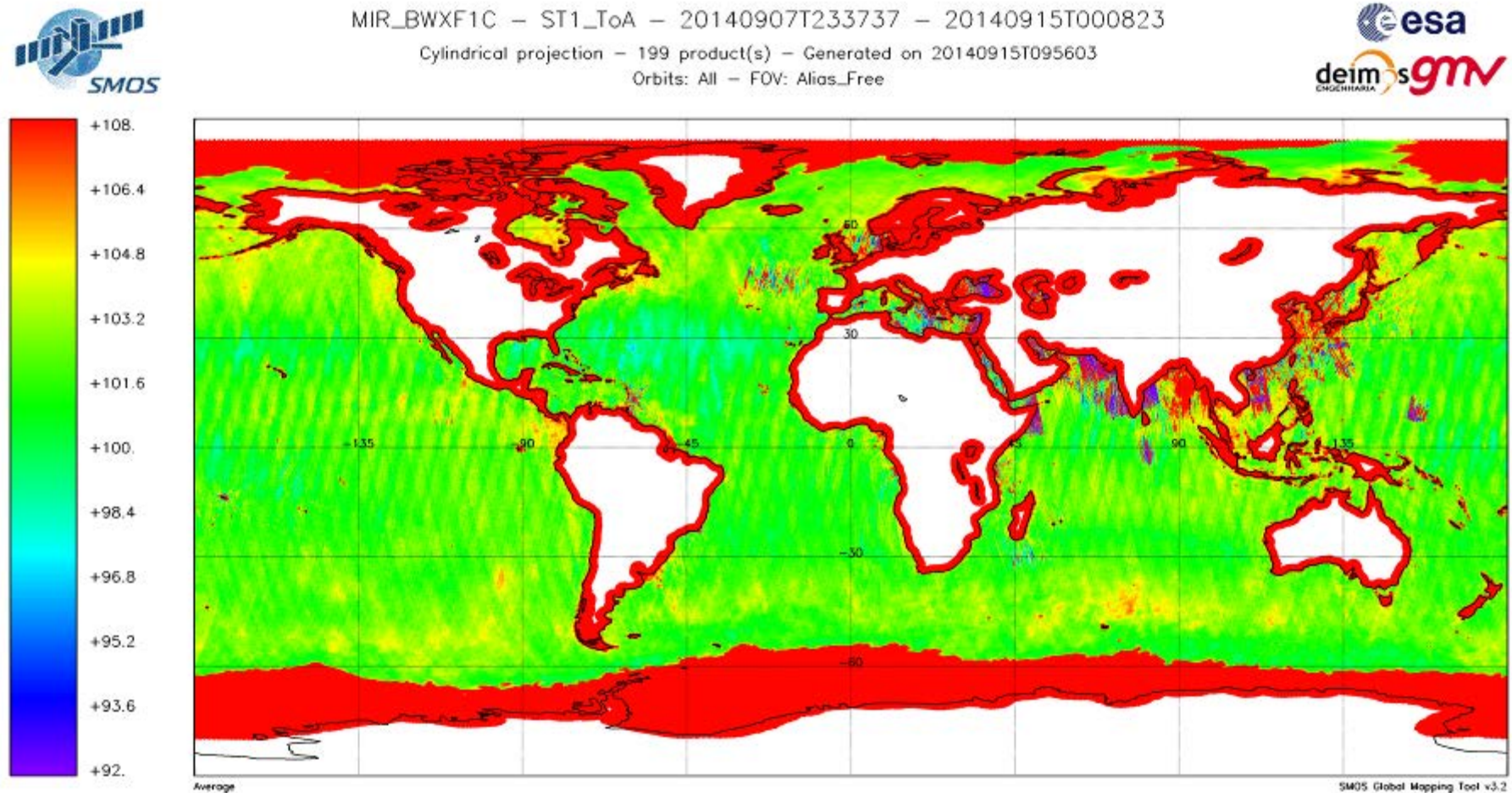




Figure 51 1st Stokes evolution over sea during the reporting period (week 3)



MIR\_BWXF1C - ST1\_ToA - 20140914T231504 - 20140921T220551  
Cylindrical projection - 199 product(s) - Generated on 20140922T095922  
Orbits: All - FOV: Alias\_Free

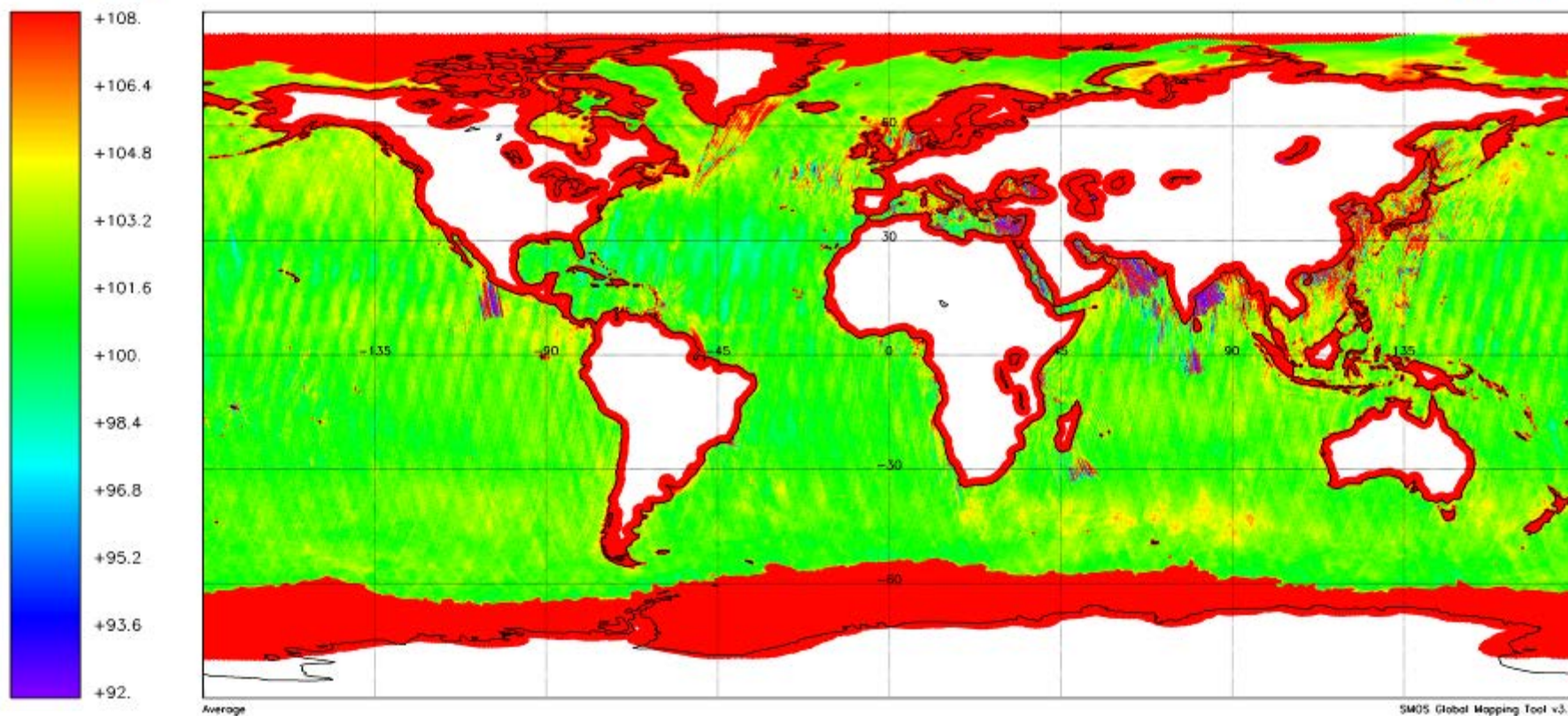


Figure 52 1st Stokes evolution over sea during the reporting period (week 4)

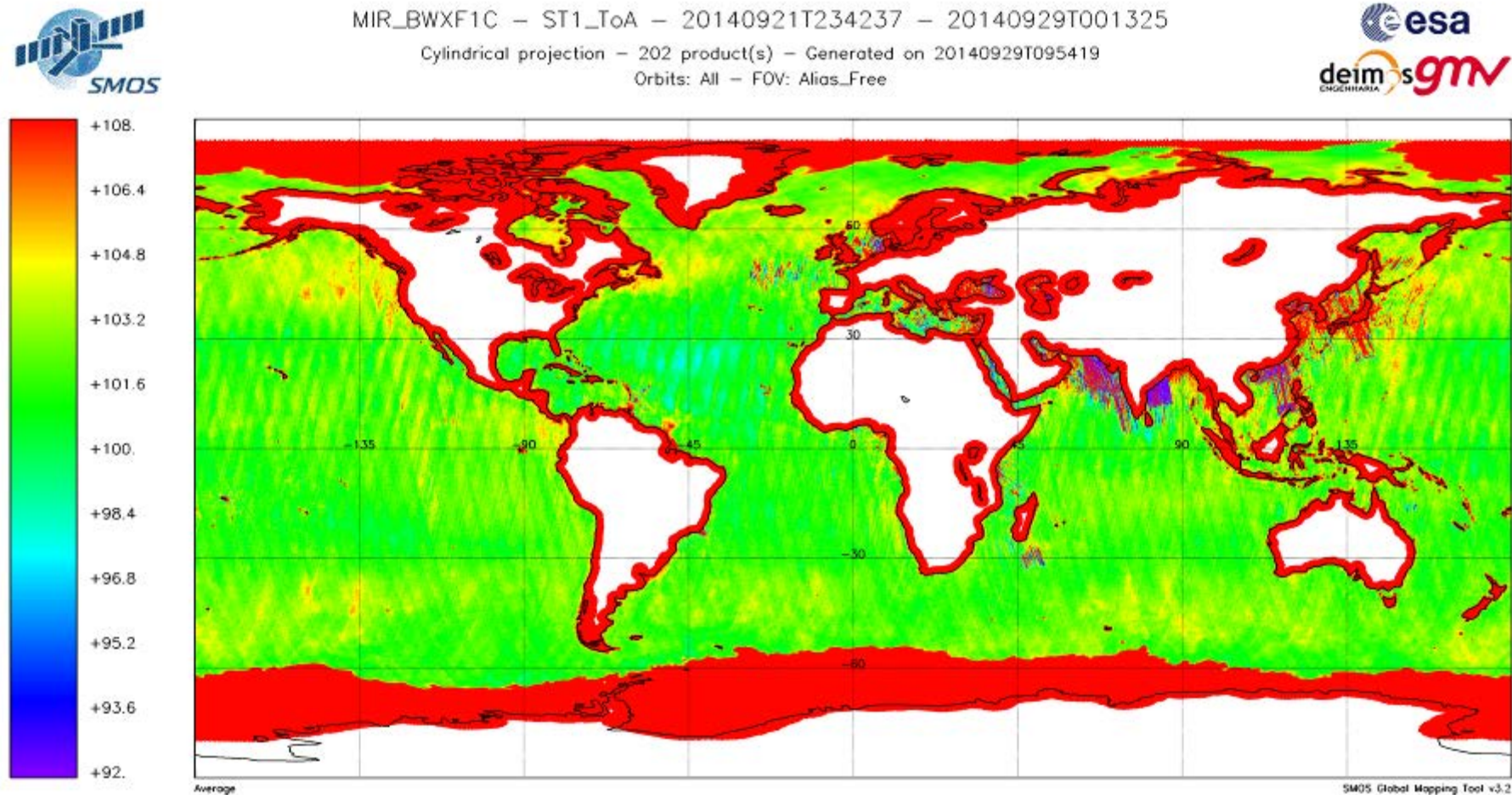




Figure 53 1st Stokes evolution over sea during the reporting period (week 5)

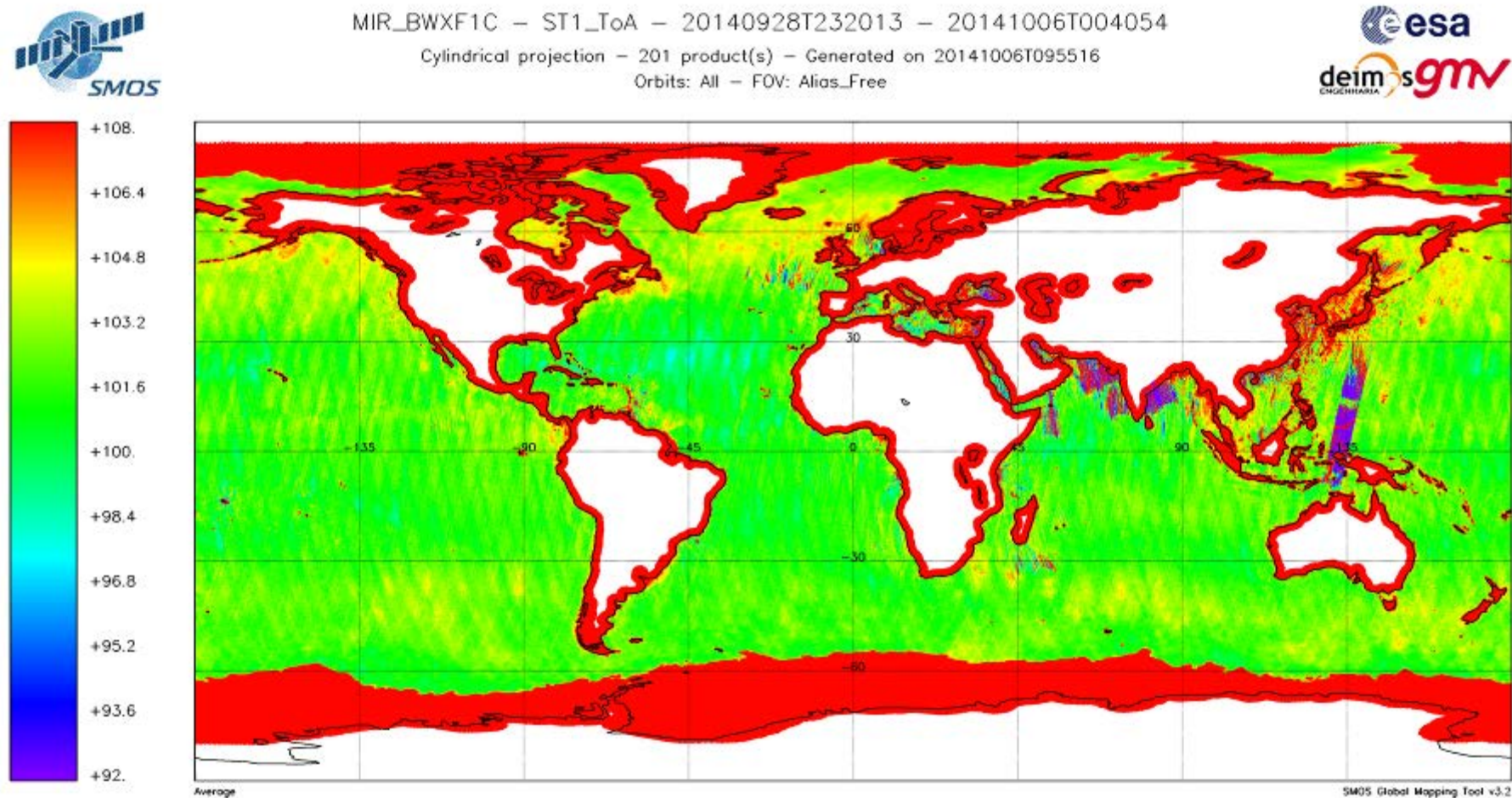


Figure 54 Real Part of the XY Brightness temperature evolution over sea during the reporting period (week 1)

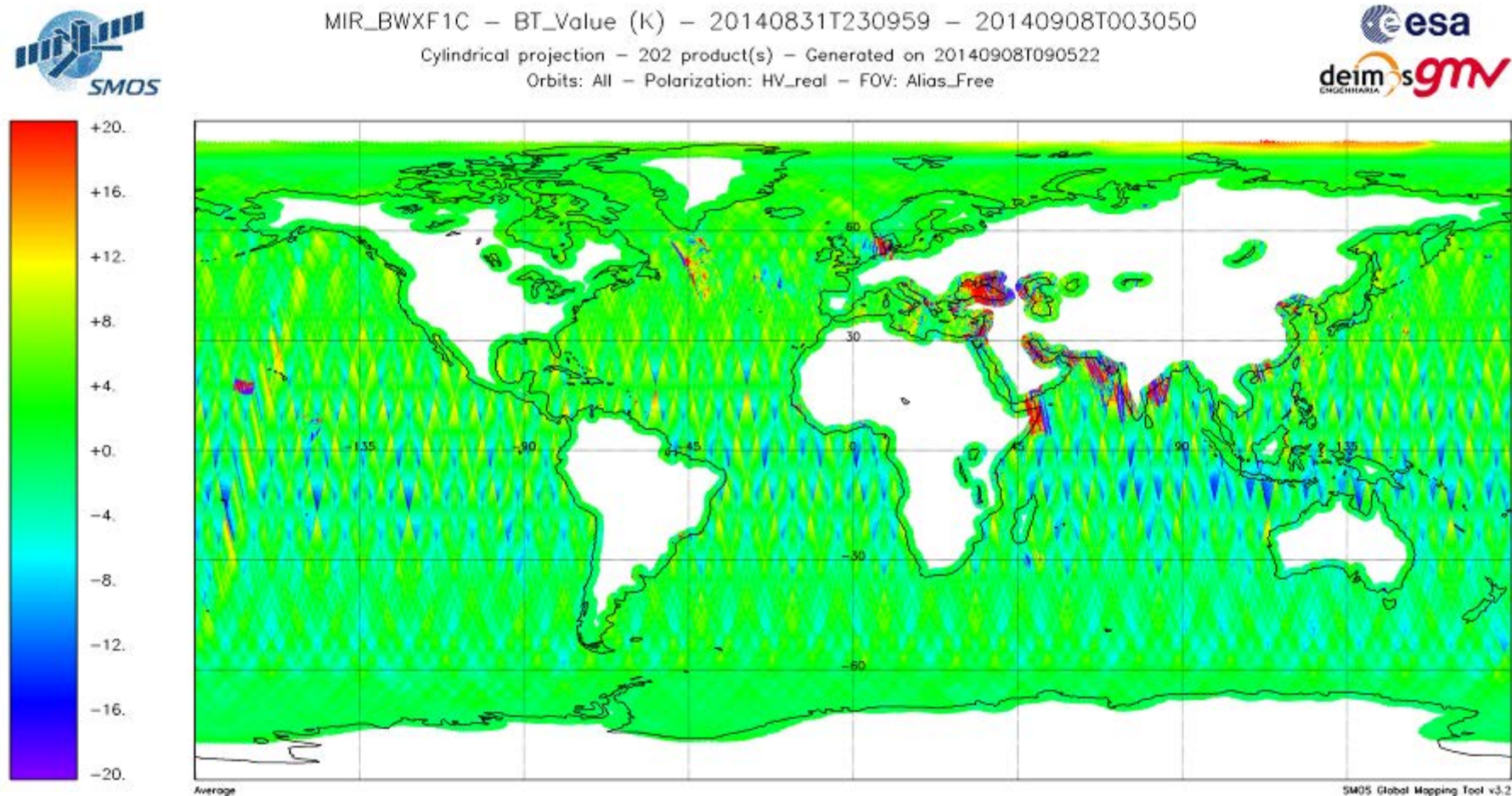




Figure 55 Real Part of the XY Brightness temperature evolution over sea during the reporting period (week 2)

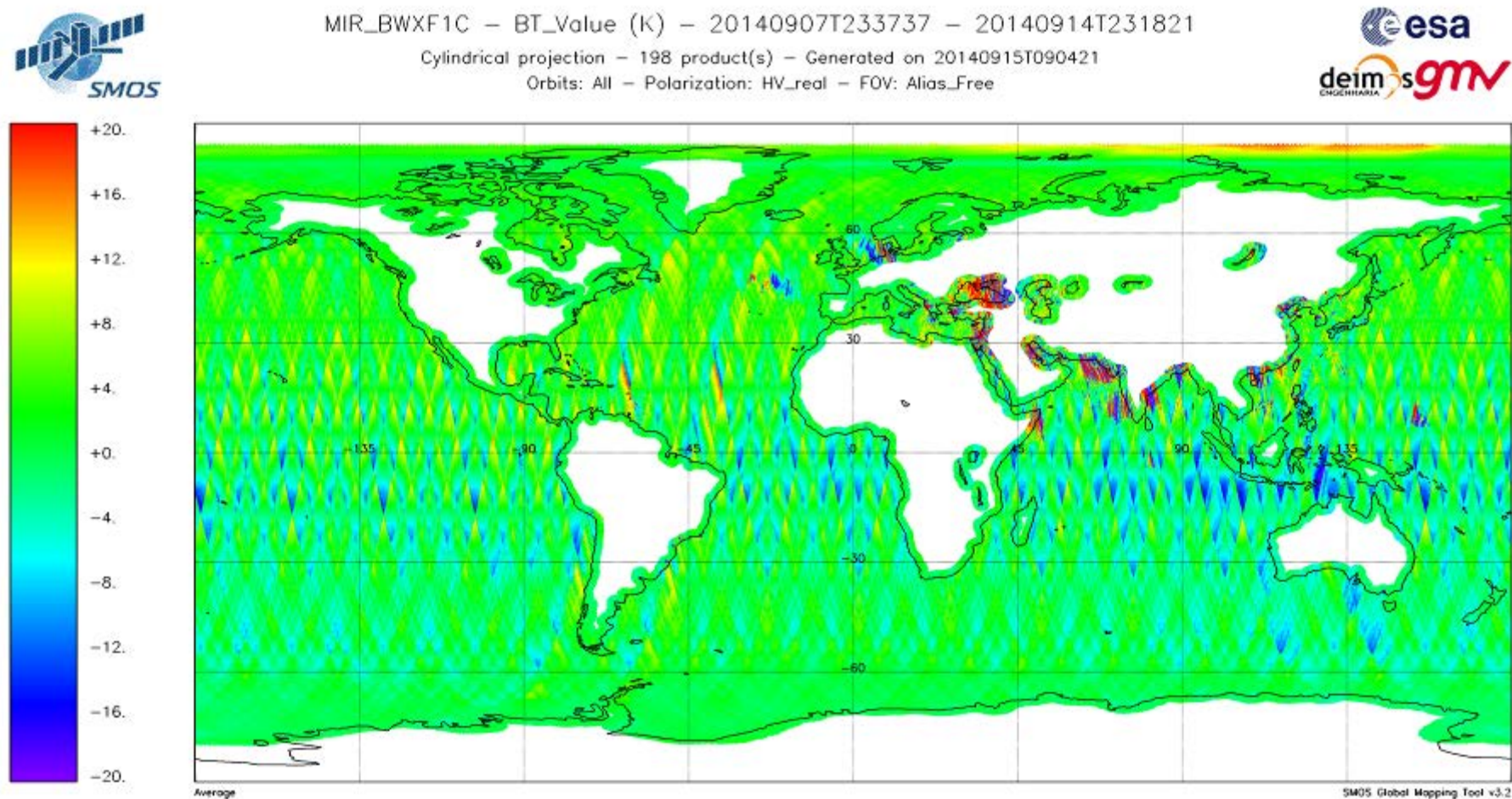


Figure 56 Real Part of the XY Brightness temperature evolution over sea during the reporting period (week 3)

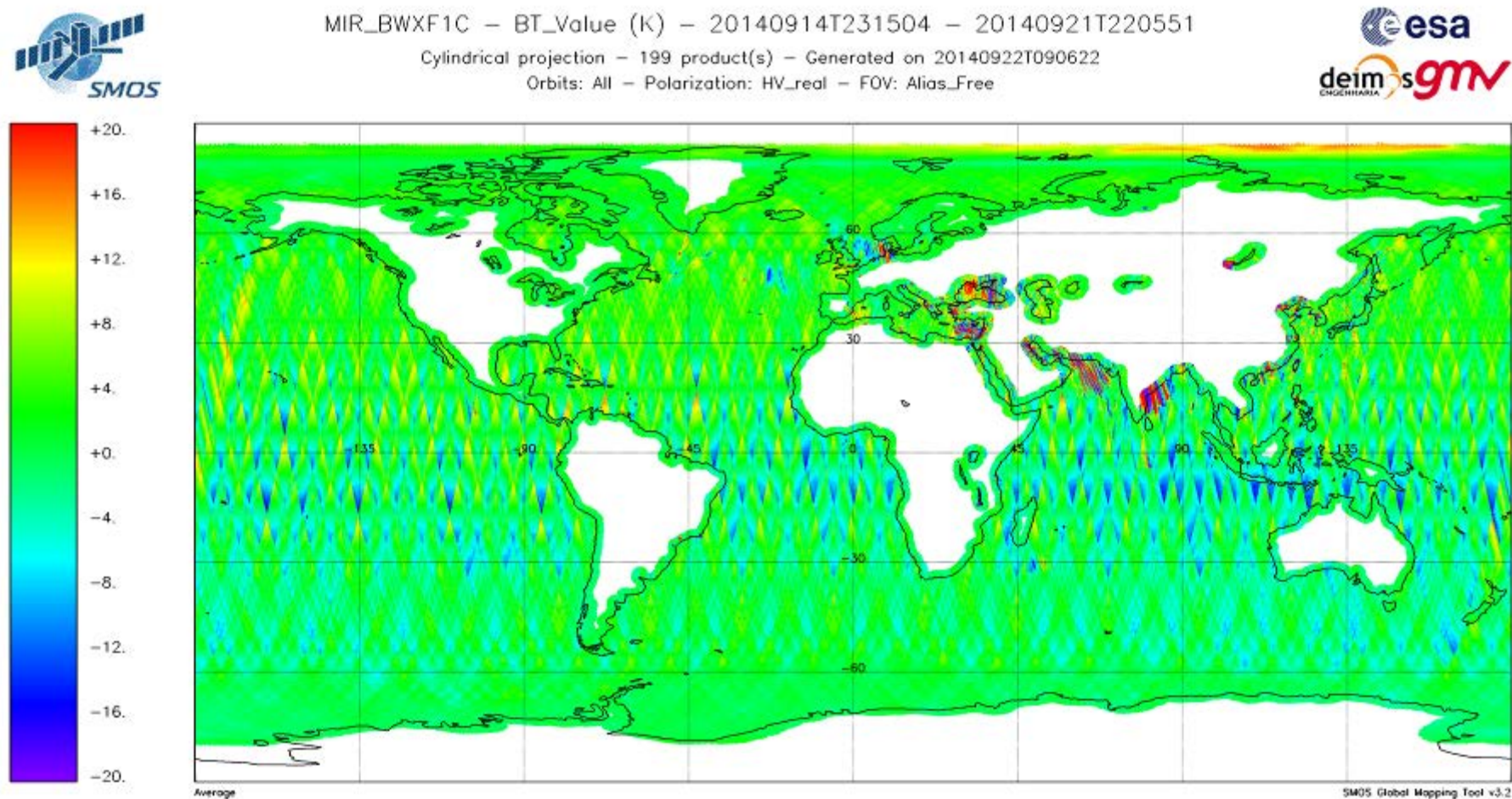




Figure 57 Real Part of the XY Brightness temperature evolution over sea during the reporting period (week 4)

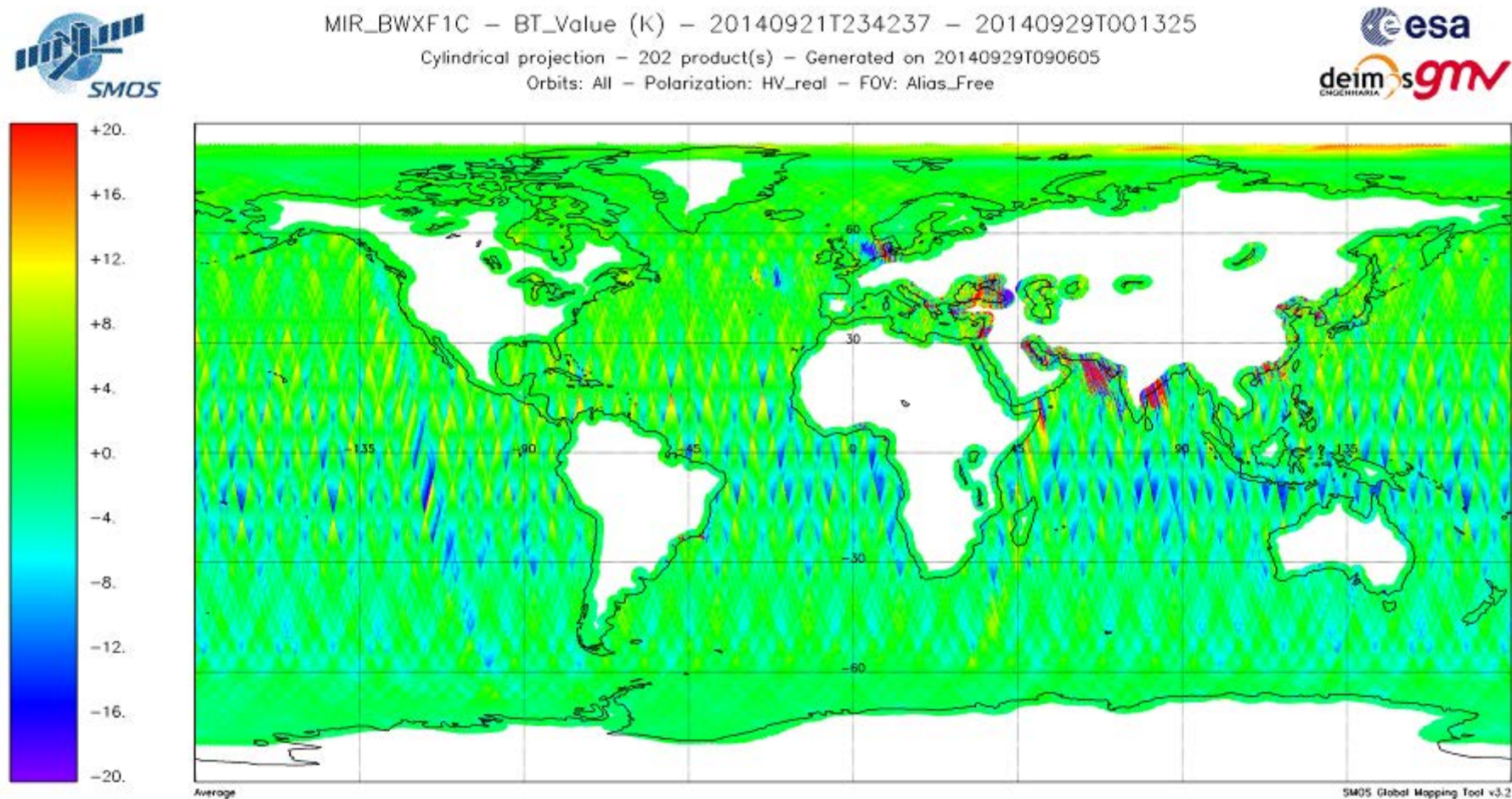


Figure 58 Real Part of the XY Brightness temperature evolution over sea during the reporting period (week 5)

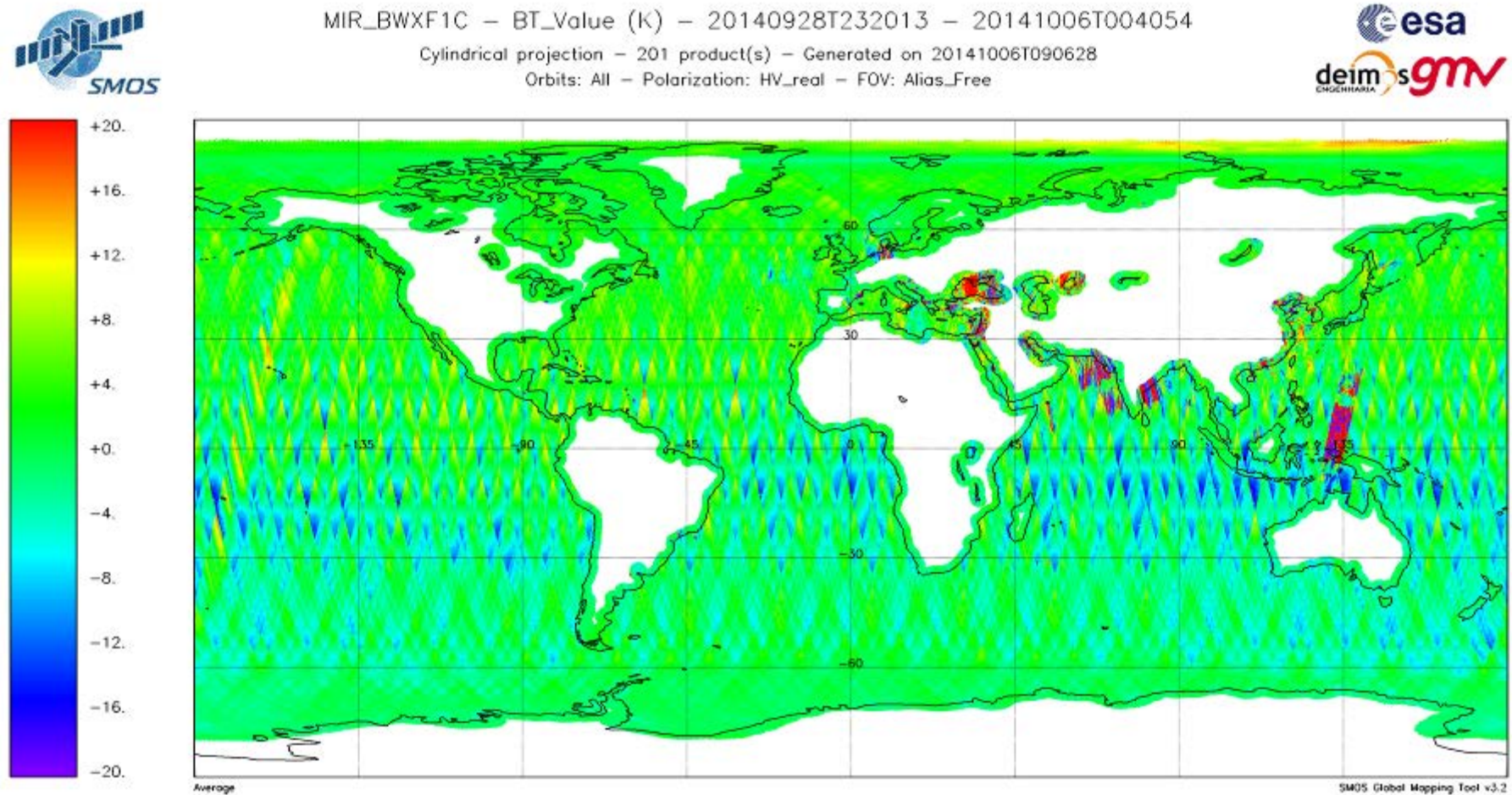




Figure 59 Imaginary Part of the XY Brightness temperature evolution over sea during the reporting period (week 1)

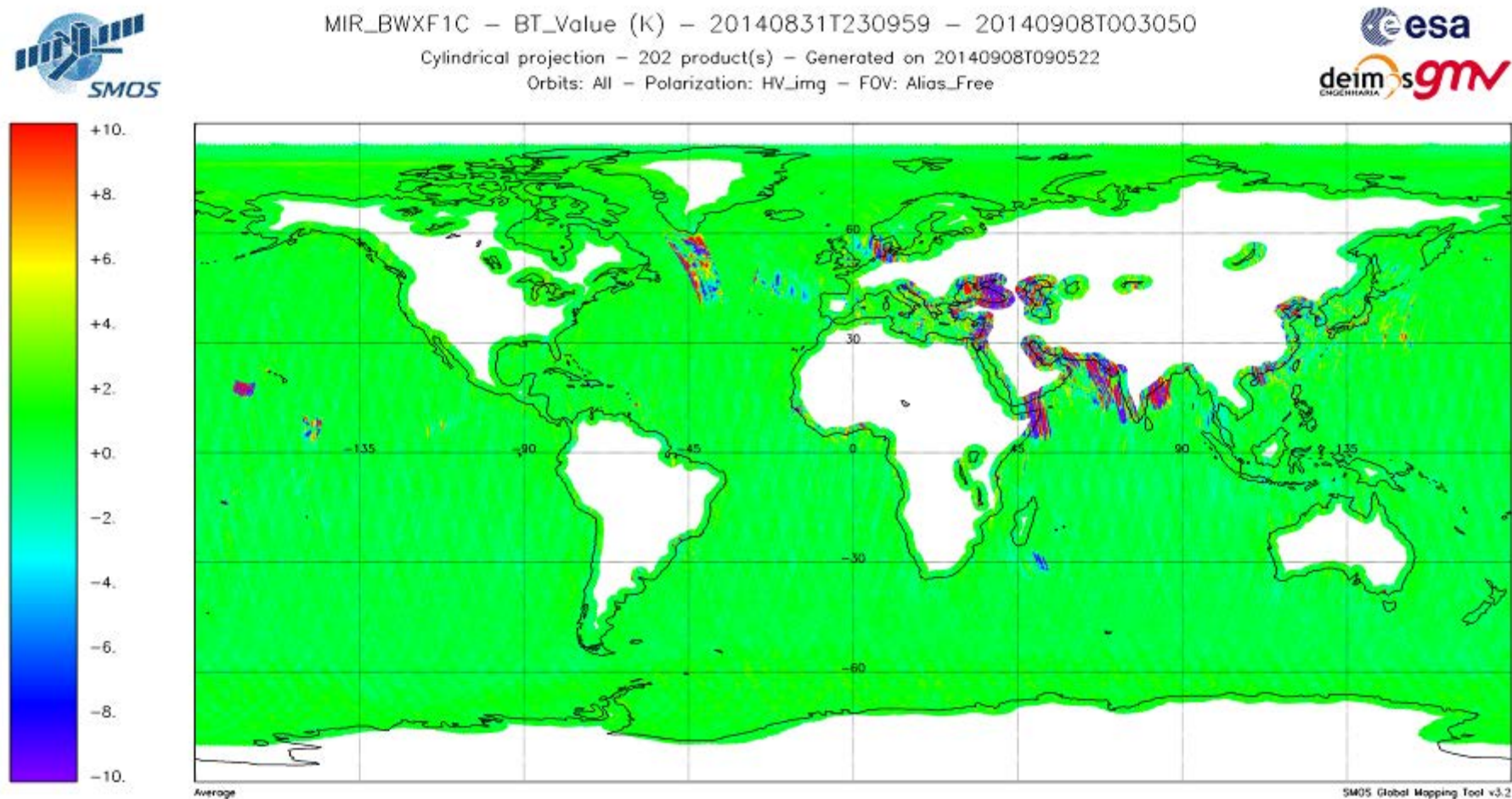


Figure 60 Imaginary Part of the XY Brightness temperature evolution over sea during the reporting period (week 2)

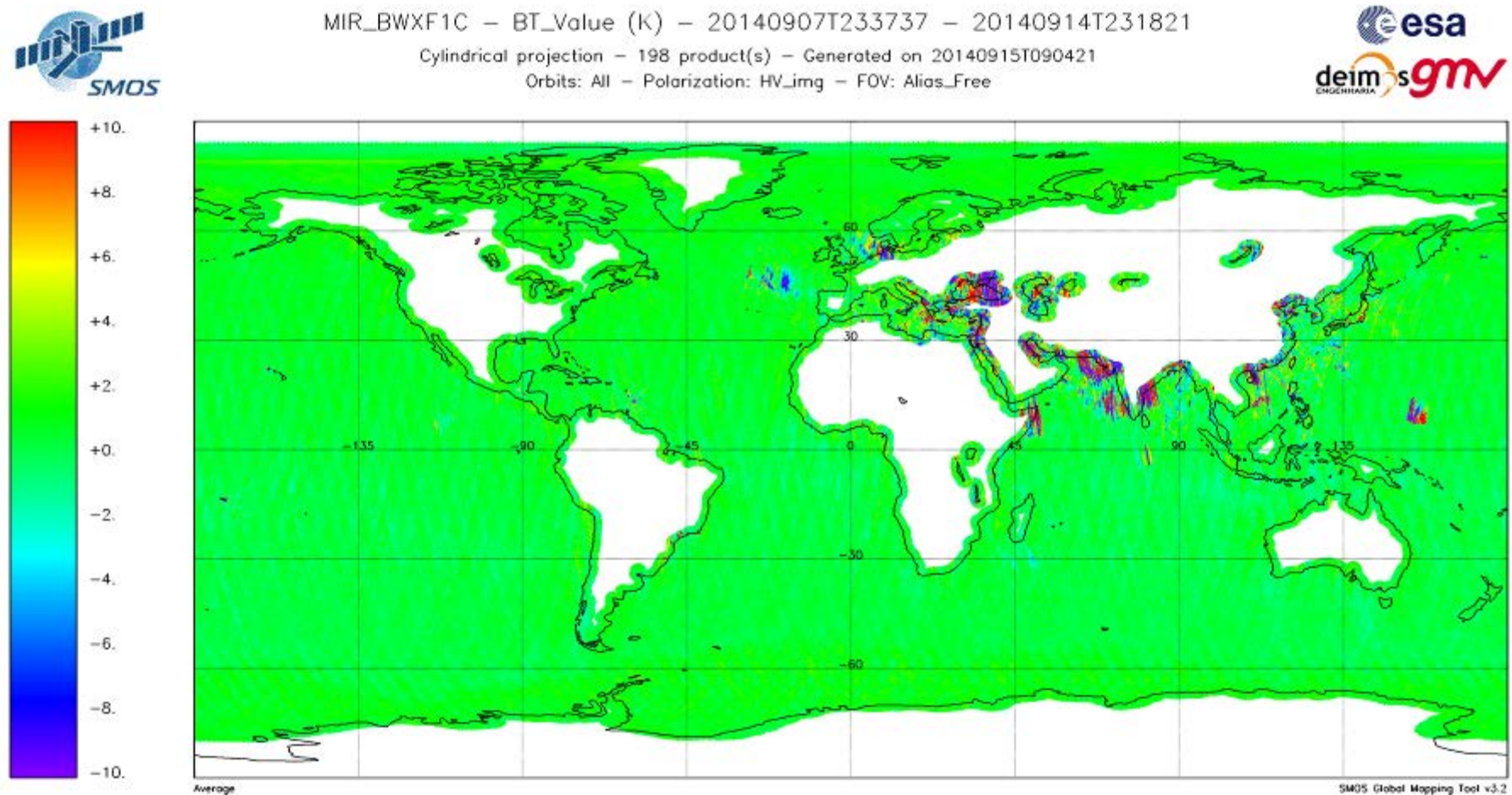




Figure 61 Imaginary Part of the XY Brightness temperature evolution over sea during the reporting period (week 3)

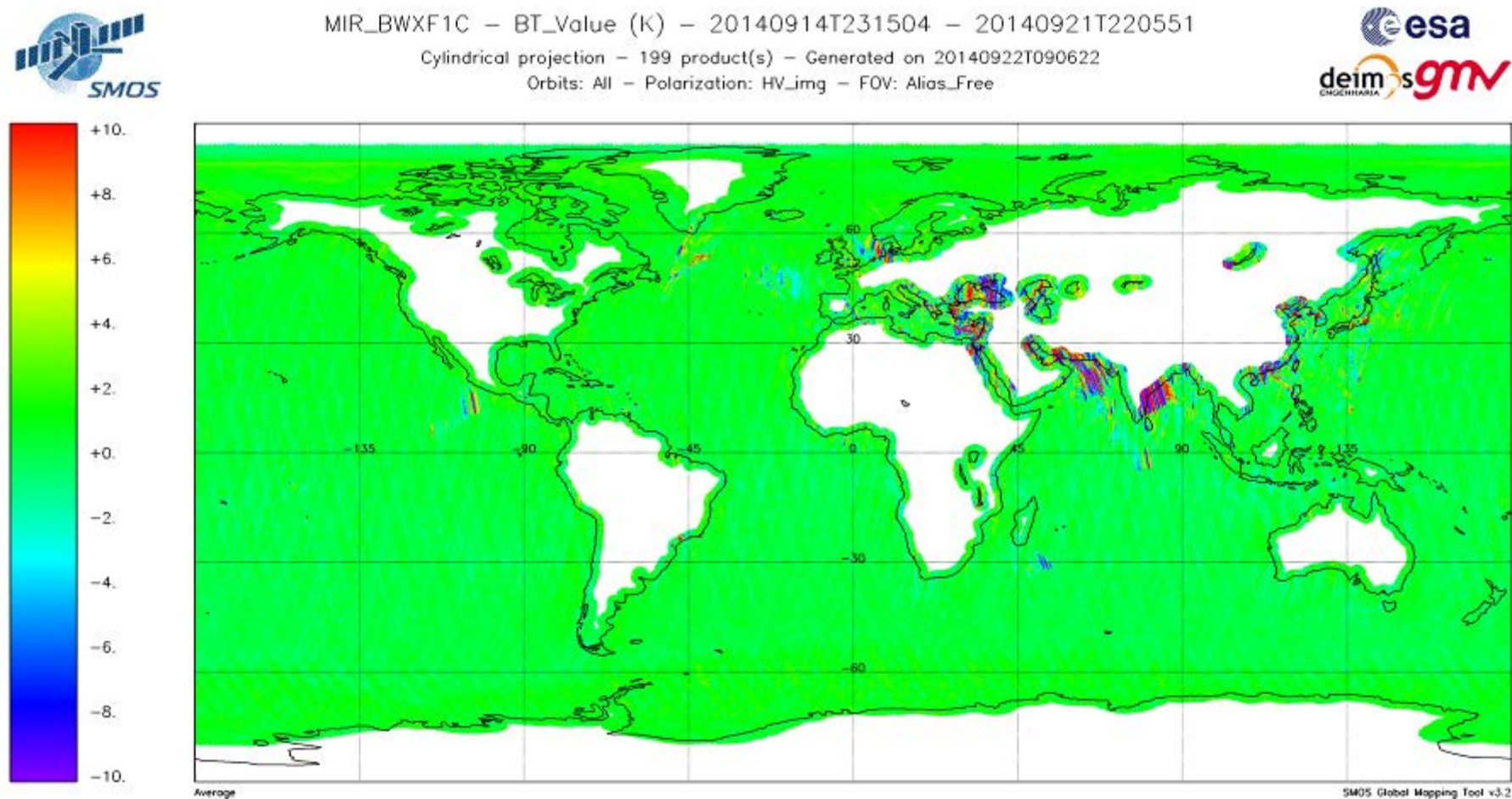


Figure 62 Imaginary Part of the XY Brightness temperature evolution over sea during the reporting period (week 4)

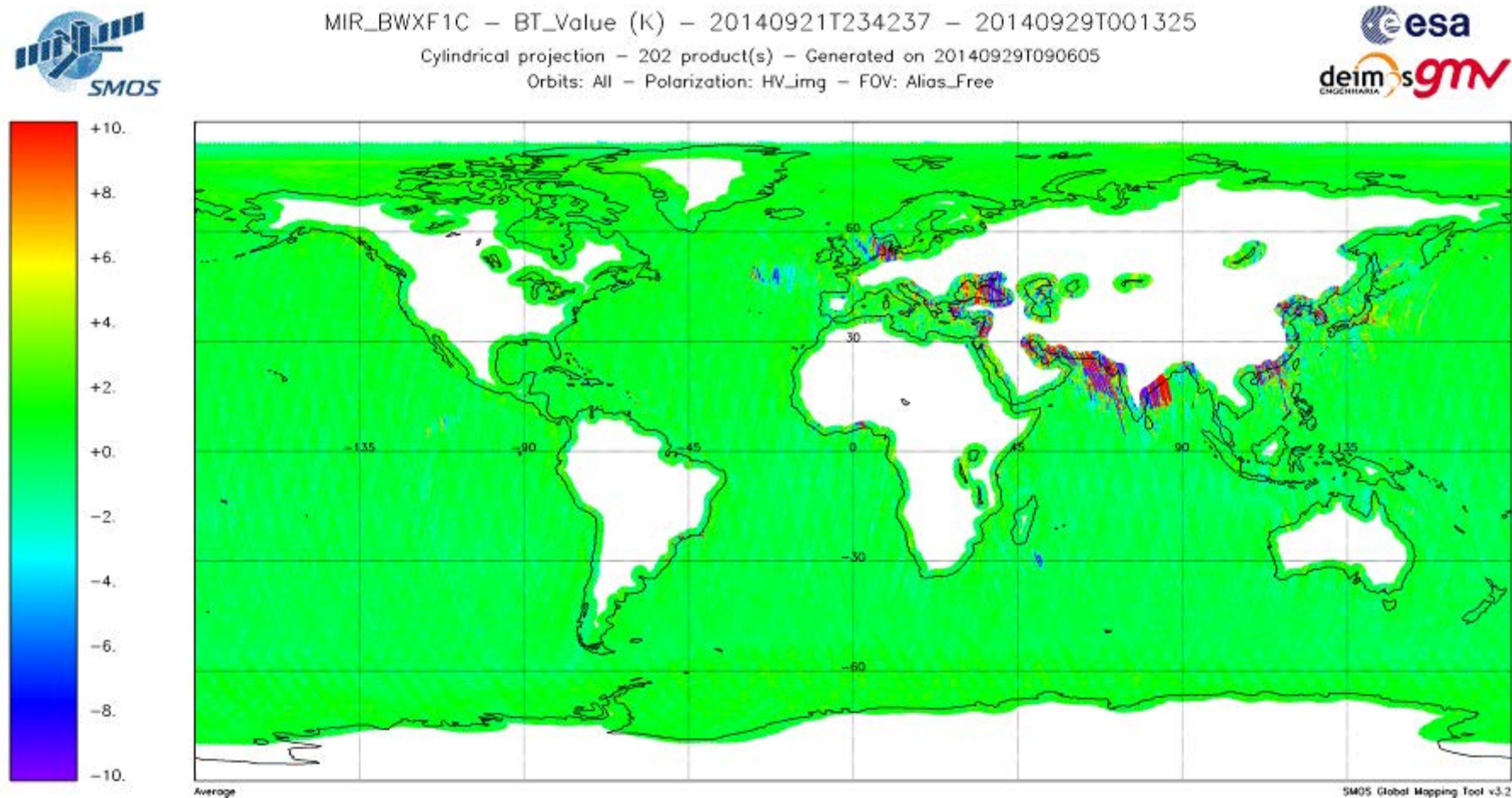




Figure 63 Imaginary Part of the XY Brightness temperature evolution over sea during the reporting period (week 5)

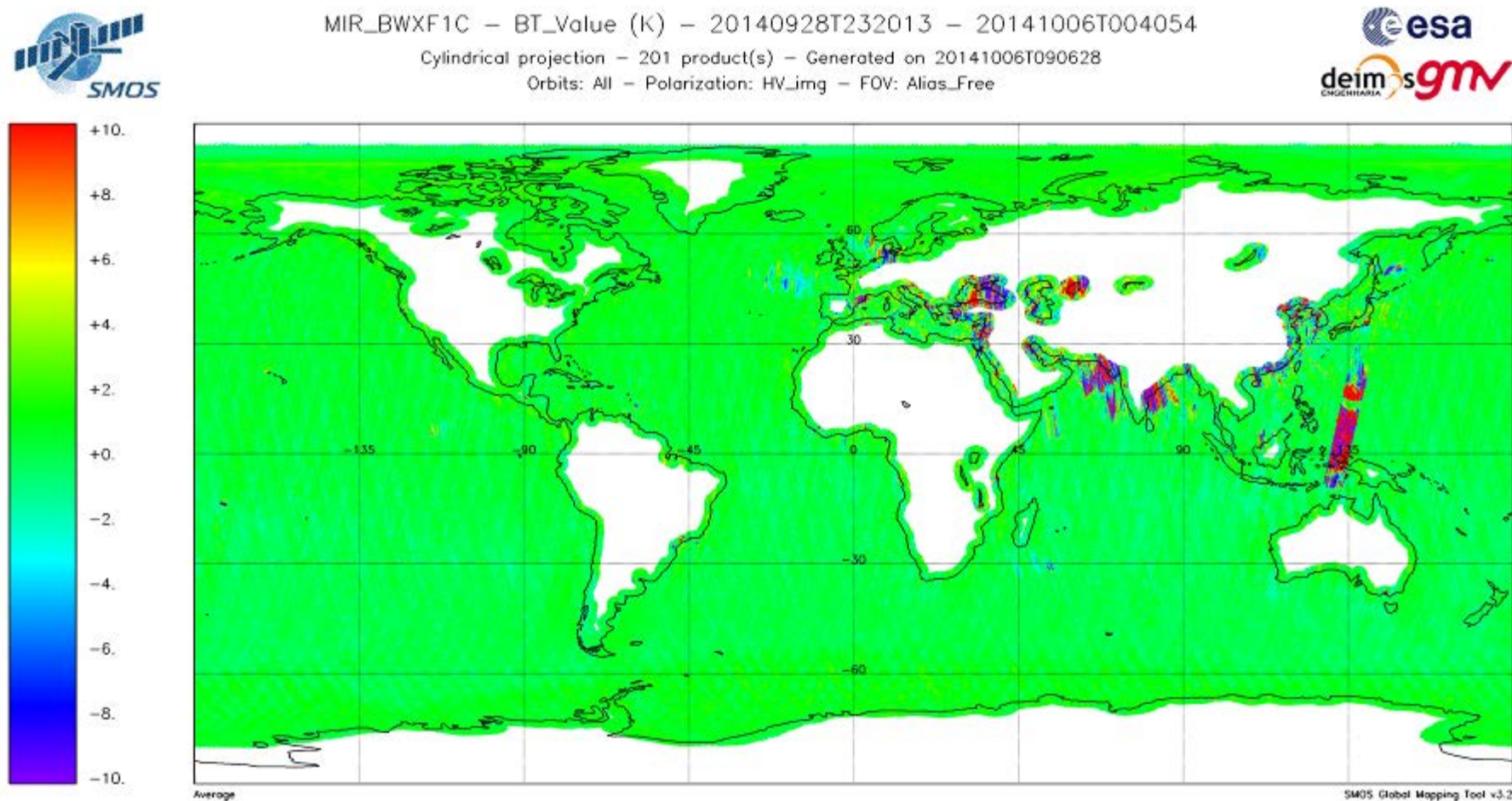


Figure 64 Soil moisture evolution during the reporting period (week 1)



MIR\_SMUDP2 - Soil\_Moisture (m3m-3) - 20140831T230959 - 20140908T003050

Cylindrical projection - 202 product(s) - Generated on 20140908T100639

Orbits: All - Fill value: None

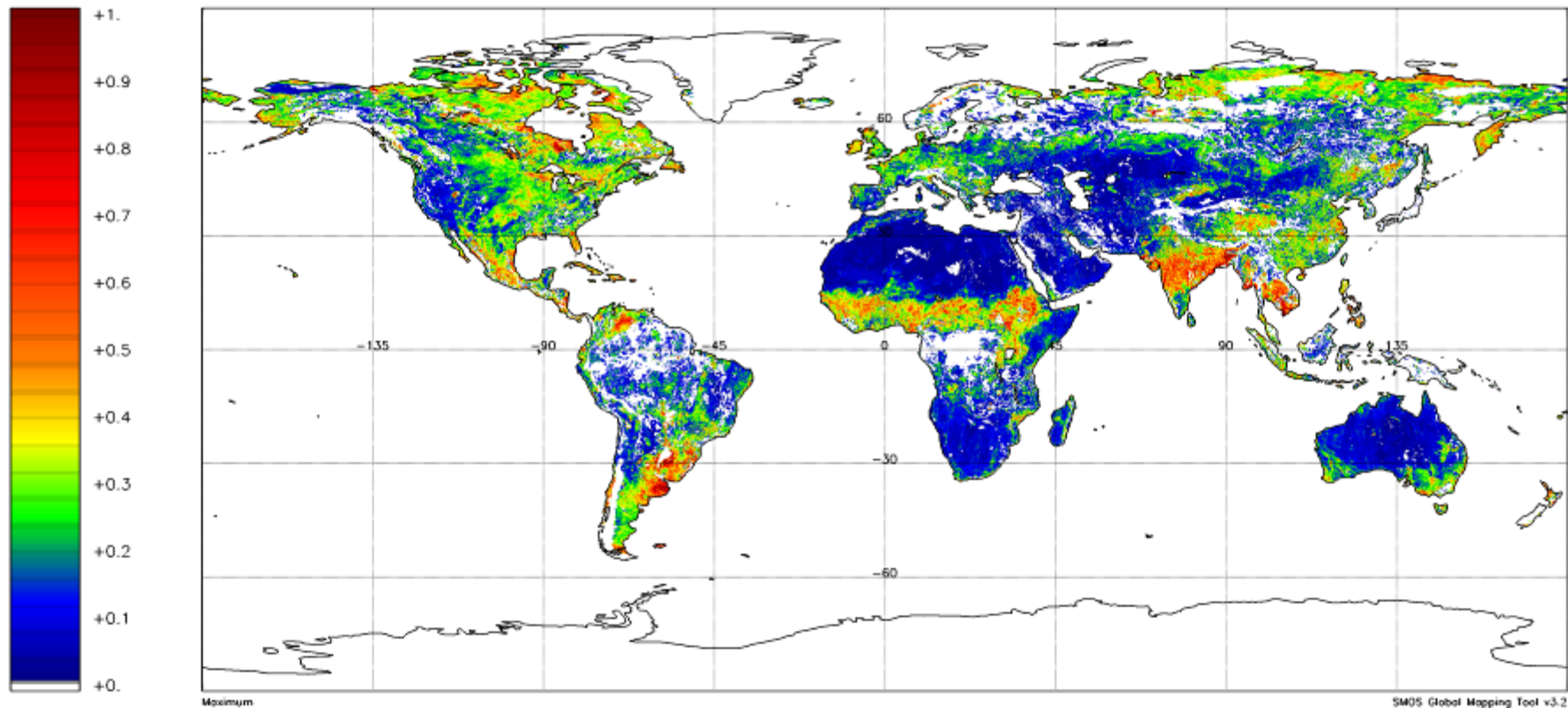


Figure 65 Soil moisture evolution during the reporting period (week 2)



MIR\_SMUDP2 - Soil\_Moisture (m<sup>3</sup>m<sup>-3</sup>) - 20140907T233737 - 20140915T000823

Cylindrical projection - 199 product(s) - Generated on 20140915T100329

Orbits: All - Fill value: None

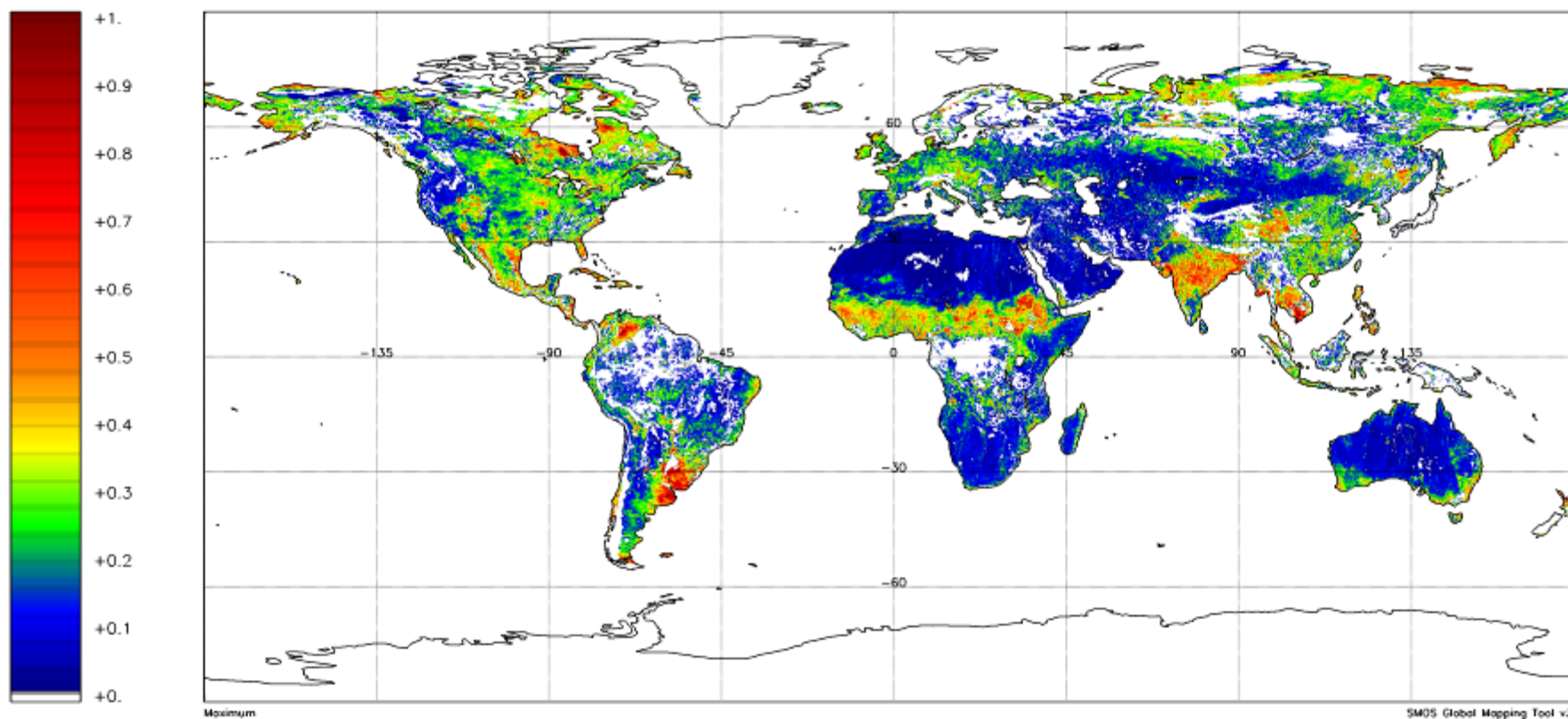




Figure 66 Soil moisture evolution during the reporting period (week 3)



MIR\_SMUDP2 - Soil\_Moisture (m<sup>3</sup>m<sup>-3</sup>) - 20140914T231504 - 20140921T202546

Cylindrical projection - 197 product(s) - Generated on 20140922T100654

Orbits: All - Fill value: None

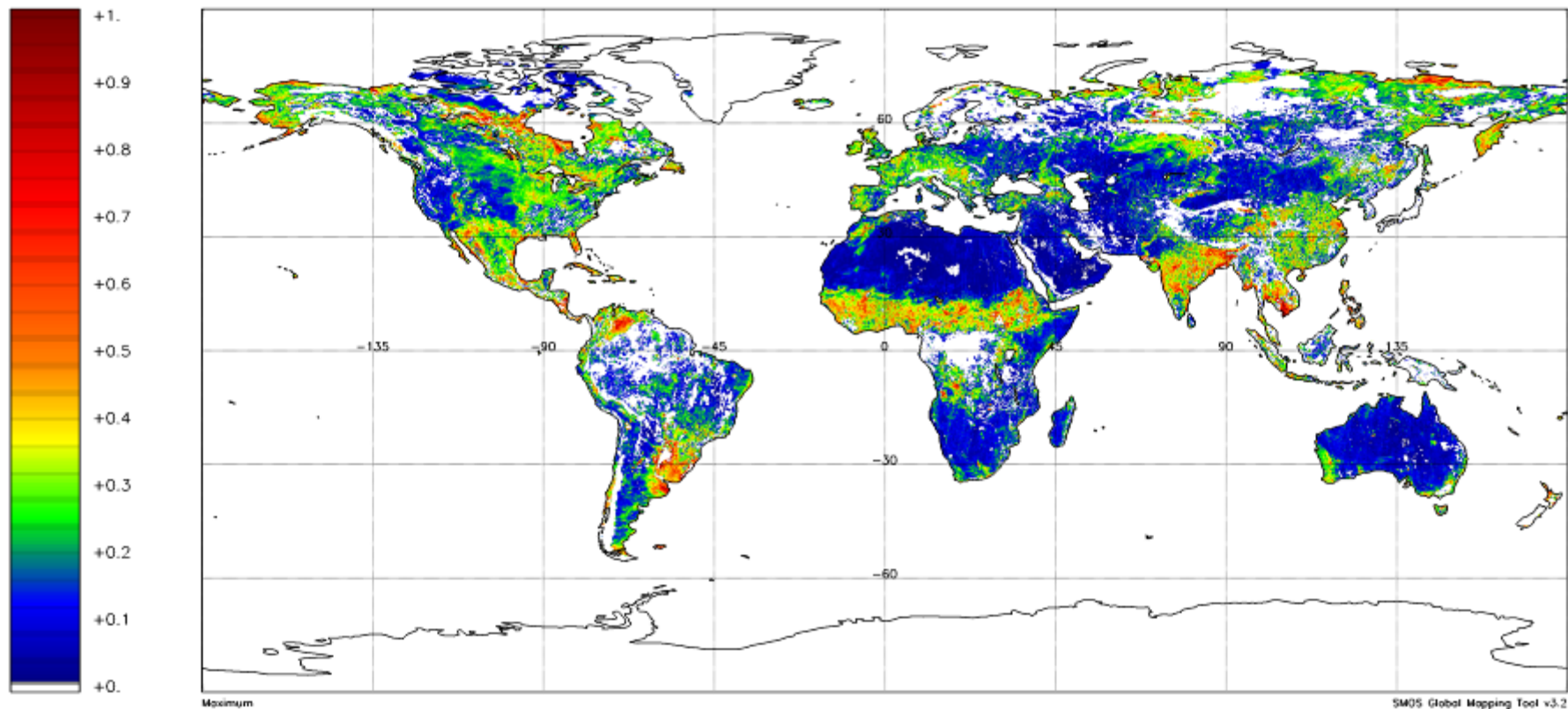


Figure 67 Soil moisture evolution during the reporting period (week 4)



MIR\_SMUDP2 - Soil\_Moisture (m3m-3) - 20140921T234237 - 20140929T001325

Cylindrical projection - 202 product(s) - Generated on 20140929T100138

Orbits: All - Fill value: None

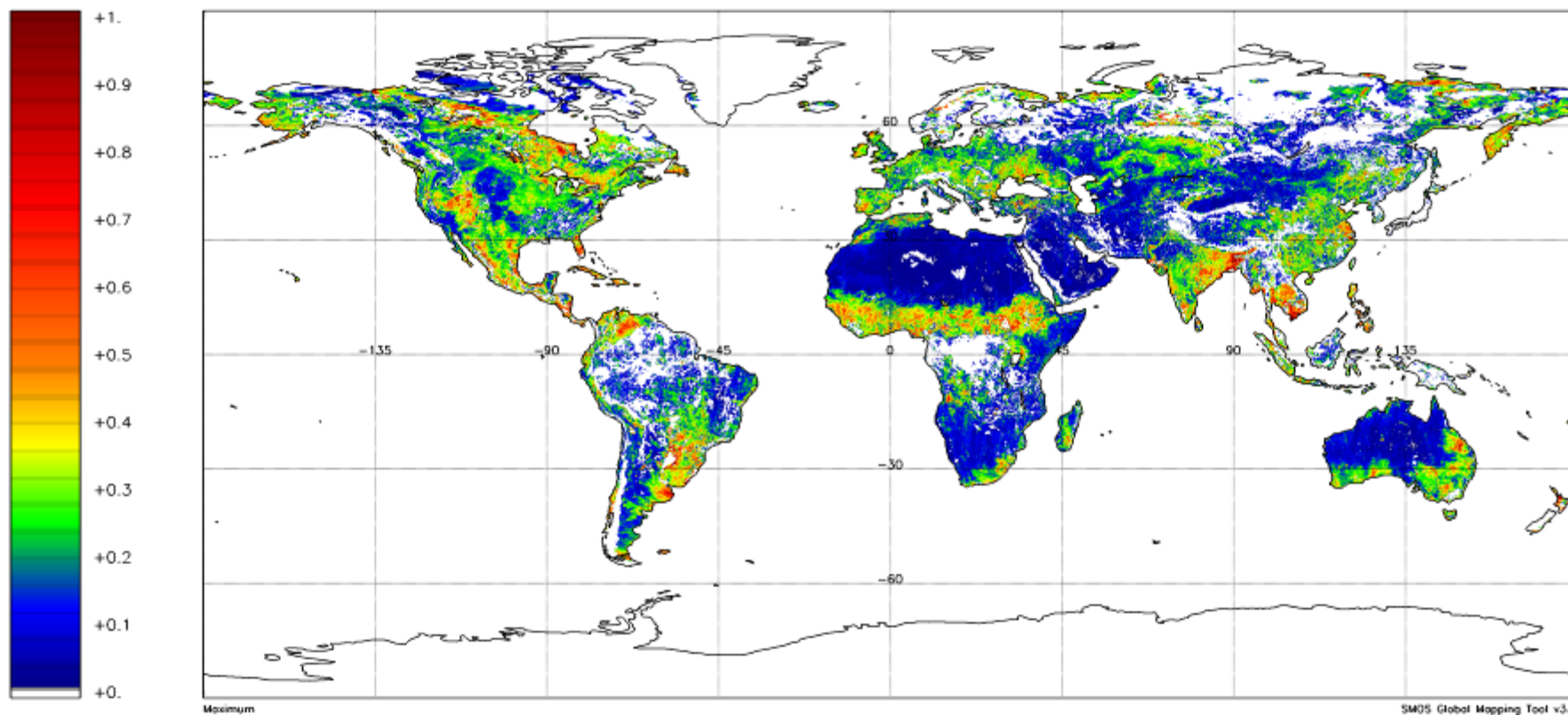


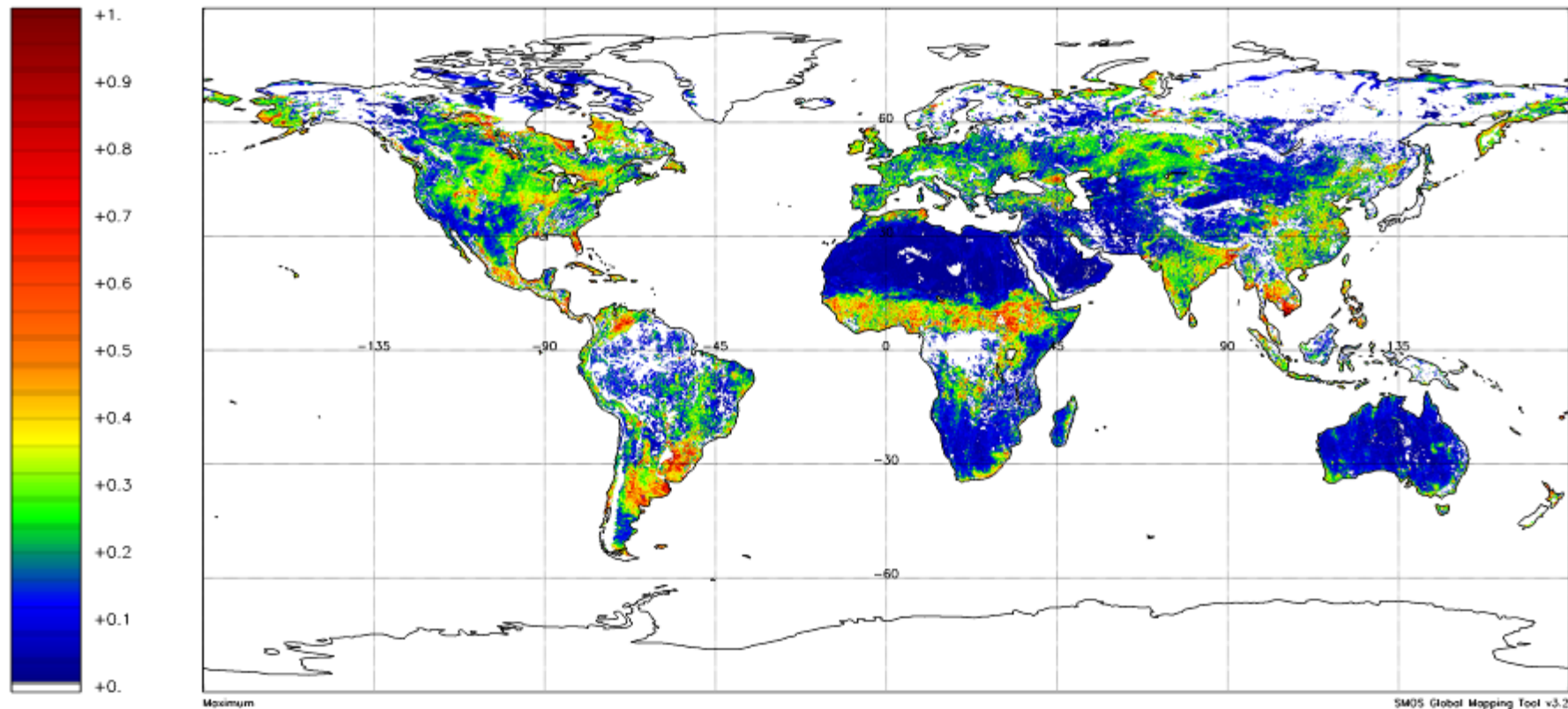
Figure 68 Soil moisture evolution during the reporting period (week 5)



MIR\_SMUDP2 - Soil\_Moisture (m<sup>3</sup>m<sup>-3</sup>) - 20140928T232013 - 20141006T004054

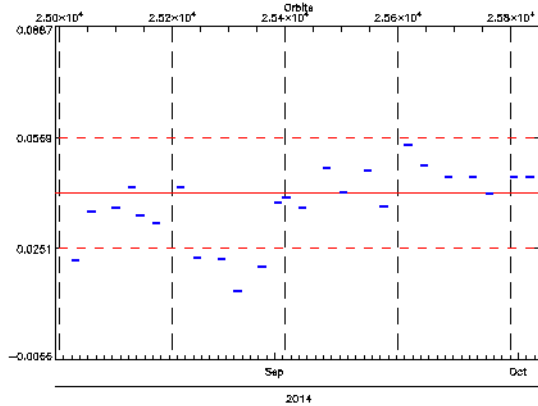
Cylindrical projection - 201 product(s) - Generated on 20141006T100301

Orbits: All - Fill value: None



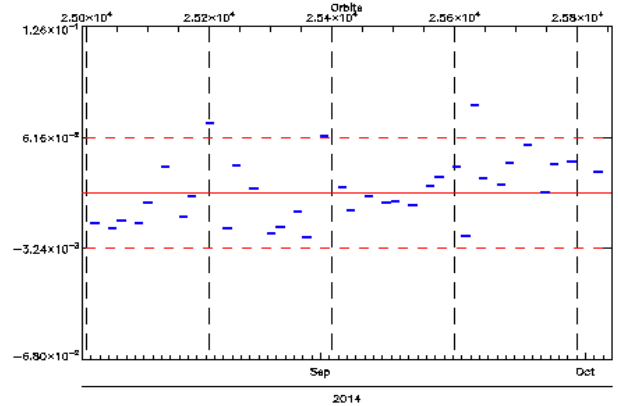


**Figure 69 Soil moisture on Taklamakan desert during the reporting period: SM in ascending passes (left) and SM in descending passes (right)**



average value  
avg + std dev  
avg - std dev

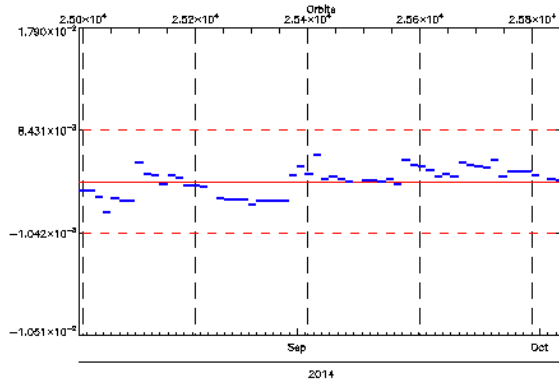
avg + std dev  
SM values last 2 months



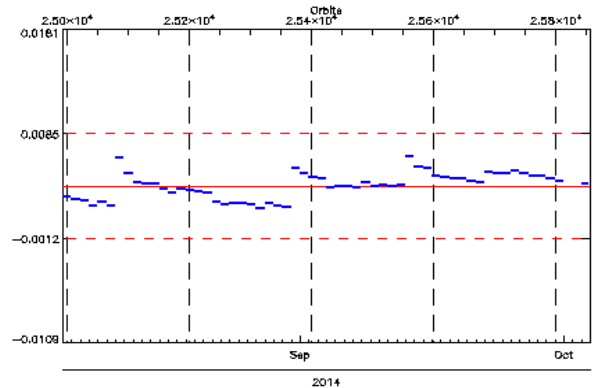
average value  
avg + std dev  
avg - std dev

avg + std dev  
SM values last 2 months

**Figure 70 Volumetric Soil Water L1 provided by ECMWF on Taklamakan desert during the reporting period: ascending passes (left) and descending passes (right)**



average value  
avg + std dev  
avg - std dev  
VOLUMETRIC\_SOIL\_WATER\_L1 values last 2 months



average value  
avg + std dev  
avg - std dev  
VOLUMETRIC\_SOIL\_WATER\_L1 values last 2 months



## 7. ADF CONFIGURATION AT THE END OF THE REPORTING PERIOD

| ADF File Type | Operational ADF Version (DPGS Baseline)                          | Updated |
|---------------|--|---------|
| AUX_APDL__    | SM_OPER_AUX_APDL__20050101T000000_20500101T000000_300_004_3.EEF  | No      |
| AUX_APDNRT    | SM_OPER_AUX_APDNRT_20050101T000000_20500101T000000_207_001_6.EEF | No      |
| AUX_APDS__    | SM_OPER_AUX_APDS__20050101T000000_20500101T000000_300_004_3.EEF  | No      |
| AUX_ATMOS__   | SM_OPER_AUX_ATMOS__20050101T000000_20500101T000000_001_010_3.EEF | No      |
| AUX_BFP__     | SM_OPER_AUX_BFP__20050101T000000_20500101T000000_340_004_3.EEF   | No      |
| AUX_BNDLST    | SM_OPER_AUX_BNDLST_20050101T000000_20500101T000000_300_001_3     | No      |
| AUX_BSCAT__   | SM_OPER_AUX_BSCAT__20050101T000000_20500101T000000_300_003_3     | No      |
| AUX_BULL_B    | SM_OPER_AUX_BULL_B_20140702T000000_20500101T000000_120_001_3     | Yes     |
| AUX_BWGHT__   | SM_OPER_AUX_BWGHT__20050101T000000_20500101T000000_340_006_3.EEF | No      |
| AUX_CNFFAR    | SM_OPER_AUX_CNFFAR_20050101T000000_20500101T000000_100_002_3.EEF | No      |
| AUX_CNFL0P    | SM_OPER_AUX_CNFL0P_20050101T000000_20500101T000000_001_005_3.EEF | No      |
| AUX_CNFL1P    | SM_OPER_AUX_CNFL1P_20110206T010100_20500101T000000_620_048_3.EEF | No      |
| AUX_CNFNRT    | SM_OPER_AUX_CNFNRT_20050101T000000_20500101T000000_505_009_3.EEF | No      |
| AUX_CNFOSD    | SM_OPER_AUX_CNFOSD_20050101T000000_20500101T000000_001_022_3.EEF | No      |
| AUX_CNFOSF    | M_OPER_AUX_CNFOSF_20050101T000000_20500101T000000_001_023_3.EEF  | No      |
| AUX_CNFSMD    | SM_OPER_AUX_CNFSMD_20050101T000000_20500101T000000_001_011_3.EEF | No      |
| AUX_CNFSMF    | SM_OPER_AUX_CNFSMF_20050101T000000_20500101T000000_001_011_3.EEF | No      |
| AUX_DFFFRA    | SM_OPER_AUX_DFFFRA_20050101T000000_20500101T000000_001_004_3     | No      |
| AUX_DFFLMX    | SM_OPER_AUX_DFFLMX_20050101T000000_20500101T000000_001_005_3     | No      |
| AUX_DFFSOI    | SM_OPER_AUX_DFFSOI_20050101T000000_20500101T000000_001_002_3     | No      |
| AUX_DFFXYZ    | SM_OPER_AUX_DFFXYZ_20050101T000000_20500101T000000_001_003_3     | No      |
| AUX_DGG__     | SM_OPER_AUX_DGG__20050101T000000_20500101T000000_300_003_3       | No      |
| AUX_DGGXYZ    | SM_OPER_AUX_DGGXYZ_20050101T000000_20500101T000000_001_004_3     | No      |
| AUX_DISTAN    | SM_OPER_AUX_DISTAN_20050101T000000_20500101T000000_001_011_3     | No      |
| AUX_DTBCUR    | SM_OPER_AUX_DTBCUR_20000101T000001_20500101T000000_611_001_3     | No      |
| AUX_ECOLAI    | SM_OPER_AUX_ECOLAI_20050101T000000_20500101T000000_305_006_3     | No      |
| AUX_ECMCDF    | SM_OPER_AUX_ECMCDF_20101109T000000_20500101T000000_001_001_3.EEF | No      |
| AUX_FAIL__    | SM_OPER_AUX_FAIL__20050101T000000_20500101T000000_300_004_3.EEF  | No      |
| AUX_FLTSEA    | SM_OPER_AUX_FLTSEA_20050101T000000_20500101T000000_001_010_3.EEF | No      |
| AUX_FOAM__    | SM_OPER_AUX_FOAM__20050101T000000_20500101T000000_001_011_3      | No      |
| AUX_GAL_OS    | SM_OPER_AUX_GAL_OS_20050101T000000_20500101T000000_001_010_8     | No      |
| AUX_GAL_SM    | SM_OPER_AUX_GAL_SM_20050101T000000_20500101T000000_001_003_3     | No      |
| AUX_GAL2OS    | SM_OPER_AUX_GAL2OS_20050101T000000_20500101T000000_001_014_3     | No      |
| AUX_GALAXY    | SM_OPER_AUX_GALAXY_20050101T000000_20500101T000000_300_003_3     | No      |
| AUX_GALNIR    | SM_OPER_AUX_GALNIR_20050101T000000_20500101T000000_300_002_3     | No      |
| AUX_LANDCL    | SM_OPER_AUX_LANDCL_20050101T000000_20500101T000000_001_004_3.EEF | No      |
| AUX_LCF__     | SM_OPER_AUX_LCF__20050101T000000_20500101T000000_500_016_3.EEF   | No      |
| AUX_LSMASK    | SM_OPER_AUX_LSMASK_20050101T000000_20500101T000000_300_003_3     | No      |
| AUX_MASK__    | SM_OPER_AUX_MASK__20050101T000000_20500101T000000_300_002_3      | No      |
| AUX_MISP__    | SM_OPER_AUX_MISP__20050101T000000_20500101T000000_300_003_3.EEF  | No      |
| AUX_MN_WEF    | SM_OPER_AUX_MN_WEF_20050101T000000_20500101T000000_001_002_3     | No      |
| AUX_MOONT__   | SM_OPER_AUX_MOONT__20050101T000000_20500101T000000_300_002_3     | No      |
| AUX_N256__    | SM_OPER_AUX_N256__20050101T000000_20500101T000000_504_001_3      | No      |
| AUX_NIR__     | SM_OPER_AUX_NIR__20050101T000000_20500101T000000_350_010_3.EEF   | No      |
| AUX_NRTMSK    | SM_OPER_AUX_NRTMSK_20050101T000000_20500101T000000_207_001_6     | No      |



**IDEAS**  
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|            |  |     |
|------------|--|-----|
| AUX_OTT1D_ | SM_OPER_AUX_OTT1D_ 20140901T000000_20500101T000000_550_001_3     | Yes |
| AUX_OTT1F_ | SM_OPER_AUX_OTT1F_ 20140901T000000_20500101T000000_550_001_3     | Yes |
| AUX_OTT2D_ | SM_OPER_AUX_OTT2D_ 20140901T000000_20500101T000000_550_001_3     | Yes |
| AUX_OTT2F_ | SM_OPER_AUX_OTT2F_ 20140901T000000_20500101T000000_550_001_3     | Yes |
| AUX_OTT3D_ | SM_OPER_AUX_OTT3D_ 20140901T000000_20500101T000000_550_001_3     | Yes |
| AUX_OTT3F_ | SM_OPER_AUX_OTT3F_ 20140901T000000_20500101T000000_550_001_3     | Yes |
| AUX_PATT_  | SM_OPER_AUX_PATT_ 20050101T000000_20500101T000000_320_003_3      | No  |
| AUX_PLM_   | SM_OPER_AUX_PLM_ 20050101T000000_20500101T000000_300_007_3.EEF   | No  |
| AUX_PMS_   | SM_OPER_AUX_PMS_ 20050101T000000_20500101T000000_340_010_3.EEF   | No  |
| AUX_RFI_   | SM_OPER_AUX_RFI_ 20050101T000000_20500101T000000_300_003_3       | No  |
| AUX_RFILST | SM_OPER_AUX_RFILST_20050101T000000_20500101T000000_100_005_3.EEF | No  |
| AUX_RGHNS1 | SM_OPER_AUX_RGHNS1_20050101T000000_20500101T000000_001_015_3     | No  |
| AUX_RGHNS2 | SM_OPER_AUX_RGHNS2_20050101T000000_20500101T000000_001_013_3     | No  |
| AUX_RGHNS3 | SM_OPER_AUX_RGHNS3_20050101T000000_20500101T000000_001_014_3.EEF | No  |
| AUX_SGLINT | SM_OPER_AUX_SGLINT_20050101T000000_20500101T000000_001_011_3     | No  |
| AUX_SOIL_P | SM_OPER_AUX_SOIL_P_20050101T000000_20500101T000000_001_002_3     | No  |
| AUX_SPAR_  | SM_OPER_AUX_SPAR_ 20110112T091500_20500101T000000_340_012_3.EEF  | No  |
|            | SM_OPER_AUX_SPAR_ 20100111T120700_20110112T091500_340_011_3.EEF  |     |
|            | SM_OPER_AUX_SPAR_ 20050101T000000_20100111T120700_340_010_3.EEF  |     |
| AUX_SSS_   | SM_OPER_AUX_SSS_ 20050101T000000_20500101T000000_001_013_3       | No  |
| AUX_SUNT_  | SM_OPER_AUX_SUNT_ 20050101T000000_20500101T000000_300_002_3      | No  |
| AUX_WEF_   | SM_OPER_AUX_WEF_ 20050101T000000_20500101T000000_001_003_3       | No  |
| MPL_ORBSCT | SM_OPER_MPL_ORBSCT_20091102T031142_20500101T000000_360_001_1     | No  |



## APPENDIX A. CONFIGURATION DOCUMENT LIST

The list of internal documents used for the generation of this report is:

- Unavailability.xls
- Details\_Calibrations.xls
- SMOS-CEC-VEG-IPF-REP-0609\_v1.69\_SMOS\_Auxiliary\_Data\_File\_List\_20141027.pdf

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